



New York City  
Board of Education Retirement System  
Performance Overview as of June 30, 2019

# Total Fund Overview

## **New York City Board of Education Retirement System**

### **Table of Contents:**

<b>Consultant's Commentary &amp; Performance Charts</b>	<b>p.3</b>
<b>Appendix A - Consolidated Performance Report</b>	<b>p.32</b>
<b>Appendix B - Public Markets Manager Performance Detail</b>	<b>p.37</b>
<b>Appendix C - Alternative Assets Manager Performance Detail</b>	<b>p.45</b>
<b>Appendix D - Footnotes</b>	<b>p.50</b>

Through June 30, 2019



### **New York City Board of Education Retirement System (BERS)**

#### **Consultant's Commentary – Through June 30, 2019**

##### **Total Fund Performance**

The Board of Education Retirement System (BERS) Total Fund returned +3.36% net of fees for the quarter ended June 30, 2019, versus the policy benchmark's return of +4.09%. For the fiscal year to date as of June 30, 2019, the Total Fund returned +6.99% net of fees, versus the benchmark return of +7.30%.

##### **Total Fund Asset Allocation**

As of June 30, 2019, the BERS Total Fund had \$6.45 billion, up from \$6.24 billion at March 2019. For the quarter, both asset allocation and investment manager selection detracted value relative to the policy index. The largest asset allocation detractions derived from the overweight within U.S. Government Treasuries and domestic equities. From a manager selection perspective, the private equity managers were unable to keep up with the Russell 3000 plus 300 basis points.

On a fiscal year to date perspective, the Fund was behind its policy index primarily due to asset allocation. The largest drag to returns came from the Treasury portfolio and to a lesser extent from domestic equity, emerging markets, and investment grade credit.

##### **Active U.S. Equity Commentary**

As of June 30, 2019, U.S. Equity was \$2.07 billion (32.1%) of the NYBERS Total Fund. The U.S. equity composite was positive in the second quarter of 2019 returning +4.09%. This performance basically matched the Russell 3000 index return of +4.10%.

##### **Active U.S. Equity Managers**

- **Wellington** returned +4.39% during the quarter versus +3.05% for the S&P Midcap 400 index. For the fiscal year to date as of June 30, 2019, Wellington returned +8.11% versus +1.36% for the S&P Midcap 400 index. Wellington is the only active mid cap U.S. manager. BERS is participating in the search to expand the allocation to mid cap U.S. active.

Through June 30, 2019



- Security selection was a driver of relative outperformance. Strong selection in consumer discretionary was partially offset by selection in health care. Sector allocation, a result of our bottom-up stock selection process, also contributed to returns. Allocation effect was driven by our underweight to real estate, but partially offset by our overweight to health care.
- The top two relative contributors were the out of benchmark allocations to Veeva Systems and Ball, while the top two relative detractors were out of benchmark allocations to 2U and Aerie Pharmaceutical. Shares of Veeva Systems rose during the period as the cloud-computing company reported better-than-expected quarterly results and raised its full-year earnings guidance. 2U Inc's shares dropped during the quarter as they cut their full-year revenue outlook creating concerns going forward. Their core business is also struggling due to expectations for lower enrollment.

### **World ex-USA Commentary**

As of June 30, 2019, World ex-USA Equity was \$791.2 million (12.3%) of the NYBERS Total Fund. World ex-USA Equity returned +3.37% in the second quarter of 2019 versus +3.50% for the World ex-USA custom benchmark. This asset class relatively underperformed for the quarter.

### **Active World ex-USA Equity Managers**

- **Sprucegrove** returned +3.43% during the quarter versus +3.79% for NYC Developed Value Benchmark. For the fiscal year to date as of June 30, 2019, Sprucegrove returned +1.42% versus +1.29% for the NYC Developed Value Benchmark.
- The portfolio continues to represent high quality value style holdings with a projected ROE of 14.5%, which is higher than the World ex-USA Index at 11.0% and financial leverage of 2.2x, which is below the World ex-USA Index at 2.6x. The portfolio has had a normalized P/E of 13.3x, a 2.1x P/B and a 3.4% dividend yield. These characteristics are consistent with the historical profile of the manager. The manager believes the portfolio is attractively valued compared to the market.
- The U.K. was the largest country exposure in the Fund at 23.4%, followed by Japan at 11.3%. Exposure to Emerging Markets was 13.6% and cash was 3.6% of the Fund at quarter end.
- Over the quarter, the Fund's underperformance was mainly due to the Emerging Markets exposure (South Africa, India) and stock selection in Holland (Boskalis Westminster, Fugro). Underperformance was partially offset by positive relative performance due to a combination of an underweight position and stock selection in Japan (Omron, Kubota). Stock selection in Norway (Yara International, TGS) and Canada (CAE, TC Energy) also had a positive impact on relative performance.
- The top 10 holdings represent 23.1% of the portfolio.

 Segal Marco Advisors

Through June 30, 2019



- **Baillie Gifford** returned +3.68% in the quarter versus +3.79% for NYC Developed Growth Benchmark. For the fiscal year to date as of June 30, 2019, Baillie Gifford returned -2.62% versus +1.29% for the NYC Developed Growth Benchmark.
- Ferrari, which designs and manufactures sports cars, was the portfolio's largest holding at 6.6%.
- At quarter end, the portfolio had +13.7% invested in Emerging Markets.
- The top 10 holdings represent +43.7% of the portfolio.
  
- **Acadian** underperformed for the quarter, +2.05% versus +2.37% for the S&P EPAC Small Cap Index. Acadian outperformed for the fiscal year as of June 30, 2019, -6.23% versus -6.38% for the S&P EPAC Small Cap Index.
- Gains realized from stock selection were more than offset by value lost from country allocations. Key sources of negative active return included a combination of stock selection and underweight positions in France and Germany, along with an overweight position in China. A combination of stock selection and underweight positions in Korea and the U.K. were more successful, as was stock selection in Australia.
- At quarter end, the portfolio's emerging markets exposure was 10.7%. The portfolio held 1,189 stocks.

### Emerging Markets Equity Commentary

As of June 30, 2019, Emerging Markets Equity was \$448.8 million (7.0%) of the NYBERS Total Fund. Emerging Markets outperformed for the quarter, +0.91% versus +0.61% for the MSCI Emerging Markets, net Index. Emerging Markets underperformed for the fiscal year as of June 30, 2019, -0.56% versus +1.21% for the MSCI Emerging Markets, net Index.

### Emerging Markets Equity Managers

- **Acadian** outperformed for the quarter, posting a +1.00% versus +0.61% for the MSCI Emerging Markets, net Index. Acadian underperformed for the fiscal year as of June 30, 2019, -1.42% versus +1.21% for the MSCI Emerging Markets, net Index.

★ Segal Marco Advisors

Through June 30, 2019



- Gains realized from stock selection were enhanced by value added from country allocations. Key sources of positive active return included a combination of stock selection and an underweight position in China, a combination of stock selection and a market overweight in Brazil, and stock selection in India. Stock selection in Taiwan, Poland, and Colombia proved less successful.

- At quarter end, the portfolio held 449 stocks.

- **CONYGT EM BlackRock** returned +0.70% versus +0.61% for the MSCI Emerging Markets, net Index during the quarter. CONYGT EM BlackRock returned +1.42% versus +1.21% for the MSCI Emerging Markets, net Index during the fiscal year as of June 30, 2019.

- Five GICS 1 sectors advanced in the quarter. Financials (+4.43%), consumer staples (+3.43%), and Utilities (+2.76%) led the market. Health care (-6.56%) was the worst performing sector, followed by Communication Services (-2.28%), and Consumer Discretionary (-1.12%).

- In North America, the U.S. administration targeted Mexico by threatening to impose a 5% tariff on all Mexican imports while raising the rate by 5 percentage points a month until it reached a levy of 25%. This pushed the Mexican shares down -7% in May. However, the U.S. later reneged on this threat after finding that Mexico had begun to make progress on stopping the flow of migrants into the U.S. The Mexican component of the MSCI EM Index rallied +1% in the quarter. Eastern Europe gained +11.6% in the quarter, making it the best performing region. Russia (+17%) outperformed as a relatively stable economic backdrop, range-bound crude prices ahead of the early July OPEC+ meeting and growing investor confidence that the U.S. government would not take further actions that would impact Russia's economy contributed to the outperformance.

### **Fixed Income— Structured Manager Composite Commentary**

As of June 30, 2019, the Total Structured Portfolio was \$1.26 billion (19.6%) of the NYBERS Total Fund. Structured Fixed Income returned +3.45% in the second quarter versus +3.92% for the benchmark. For the fiscal year as of June 30, 2019, Structured Fixed Income returned +8.19% versus +9.47% for the benchmark.

### **Fixed Income— Structured Manager Composite Managers**

- **BlackRock (mortgages)** returned +2.26% in the quarter, outperforming the FTSE Mortgage index return of +2.09%. For the fiscal year as of June 30, 2019, BlackRock (mortgages) returned +6.63% versus +6.39% for the FTSE Mortgage index.

- Sector selection added to performance during the quarter. The portfolio overweight position in CMBS and Agency CMOs benefited the portfolio's total performance. CMBS had an average weight of 9.33 vs. the FTSE Mortgage Index of 0.0. The overweight to CMBS added +34 basis points to the portfolio's total performance. Agency CMOs had an average weight of 3.42 vs the the FTSE Mortgage Index of 0.0. The overweight position added +8 basis points to the portfolio's total performance.

★ Segal Marco Advisors

Through June 30, 2019



- At quarter end, the portfolio held 1,168 holdings.
- **Prudential (credit)** returned +4.17% in the quarter, outperforming the Investment Grade Credit index return of +4.07%. For the fiscal year as of June 30, 2019, Prudential (credit) returned +10.14% versus +10.13% for the Investment Grade Credit index.
- **SSgA (governments)** returned +4.53% in the quarter, slightly below the +4.56% return for its NYC - Treasury Agency plus five index benchmark. For the fiscal year as of June 30, 2019, SSgA (governments) returned +10.29% versus +10.38% for the NYC - Treasury Agency plus five index.
- U.S. rates rallied significantly over the quarter overall, particularly over the months of May and June, driven by dovish comments from the Fed, escalation of US-China trade tension and softer data. The risk-off tone started on the back of escalation in US-China trade tension and implementation of the newest tariff implementation on Mexico. In the beginning of May, U.S. increased tariffs on \$200bn Chinese exports from 10% to 25%, and later threatened to impose 25% tariffs on \$300bn worth of additional goods. In retaliation, China imposed tariffs on \$60bn worth of US goods. However, towards the end of quarter, there was positive development in the trade negotiations as President Trump and President Xi met at the G-20 meeting and announced a truce, implying no further escalation for time being.
- **SSgA 1 -3 Yr. Treasury Index** returned +1.44% in the quarter, matching the FTSE USBIG Treasury 1 -3 Yr. index return of +1.44%. For the fiscal year as of June 30, 2019, the SSgA 1-3 Yr. Treasury Index returned +3.95%, matching the FTSE USBIG Treasury 1 -3 Yr. index return of +3.95%.
- Over the reporting period, tracking for the strategy was very tight; therefore, an attribution analysis is not applicable.
- **Taplin, Canida & Habacht** returned +4.48% in the quarter versus +4.07% for the Investment Grade Credit index. For the fiscal year as of June 30, 2019, Taplin, Canida & Habacht returned +10.13%, matching the Investment Grade Credit index of +10.13%.
- Sector and quality selection added to performance during the quarter. The portfolio had an overweight to corporate credit (+104 basis points of excess return vs. +23 basis points for non-corporate credit), which benefitted as spreads tightened marginally despite volatility. By sector, the overweight to industrials (+113 basis points of excess return) added to relative performance.
- Security selection was a mild drag on performance in the quarter. Security selection within the pharmaceutical and technology sectors detracted from performance, while selection within automotive and telecommunications sectors added to performance for the quarter.

 Segal Marco Advisors

Through June 30, 2019



### **Enhanced Yield Fixed Income & Bank Loans Commentary**

As of June 30, 2019, Enhanced Yield Fixed Income & Bank Loans was \$413.8 million (6.4%) of the NYBERS Total Fund. This allocation is in line with the investment policy target. The high yield manager search has been completed and Shenkman and Loomis were replaced with Nomura and Mackay Shields.

- **Mackay Shields** returned +2.43 in the quarter versus +2.50% for Bloomberg Barclays US High Yield – 2% Issuer Cap index.
- The portfolio's underweight and positive security selection within Energy - Oil Field Services contributed to relative performance, as the portfolio did not own the bonds of Weatherford International, whose bonds fell in price after the company announced its intention to file for Chapter 11 protection. This effect was mitigated by an overweight and security selection in the Exploration & Production sector. Selection was positive within Electric-Integrated as GenOn Energy performed well over the quarter. An underweight to Tenet Healthcare contributed to returns in Health Facilities as the bonds lagged on headlines of "Medicare for all" reform.
- An underweight and positive selection in CCC-rated credits was positive for returns as this segment underperformed the broader market. The portfolio's underweight to longer maturity BBs was a detractor from performance as long-term rates fell.
- **Nomura** returned +2.19 in the quarter versus +2.50 for Bloomberg Barclays US High Yield – 2% Issuer Cap index.
- Our US high yield strategy underperformed the index during the quarter due to a few key factors. A significant driver of our underperformance was our legacy overweight to Bs, our underweight to BBs, and our short duration posture. This positioning did not benefit our strategy with the rally in rates and the market's focus on higher quality bonds. We have mitigated this posture by buying longer duration BB bonds, and we will continue to seek to manage risk in a late-cycle environment.
- On a sector basis, the top contributors to relative performance for the quarter included positive security selection in Electric-Integrated, Oil Field Equipment & Services, and Cons/Comm/Lease Financing. Sector detractors included Energy-Exploration & Production, Wireline Telecom, Cable & Satellite TV, and Specialty Retail. While we have reduced our Energy sector exposure over the course of the quarter, our positioning still caused part of the performance deficit. We had a constructive view on oil prices at the beginning of 2019, given OPEC (+Russia) production restraint, Venezuela and Iran sanctions, and slower North American capital spending. However, the sector continues to see a number of production problems, and the market has become reluctant to fund companies with cash flow deficits.



Through June 30, 2019



### **Enhanced Yield Fixed Income & Bank Loans Managers**

- **Babson** returned +0.95% during the quarter, underperforming the +1.58% return of the Credit Suisse Leveraged Loan Index. For the fiscal year as of June 30, 2019, Babson returned +2.98%, underperforming the +4.15% return of the Credit Suisse Leveraged Loan Index.
- Quarterly attribution analysis indicates that Credit Selection was the primary contributor to the unfavorable performance comparison for the quarter. Industry Sector Allocation had only a modest negative impact. The attribution within Credit Selection highlights a mix of sector specific factors as well as some idiosyncratic issues that impacted performance. Sector specific factors include certain credits in the Healthcare space have traded poorly as regulatory uncertainty emerges as an issue during the early stages of the upcoming presidential election.
- Energy issues were in the spotlight during the quarter as volatility in oil prices once again factored into valuations for certain E&P and Service oriented Companies. A look at the Top Ten/Bottom Ten performers reveals issuers Seadrill partners and Fieldwood Energy back in the bottom ten list. Serta Simmons remains a portfolio challenge in the consumer Durables space as the largest North American mattress distributor continues to underperform in the very competitive mattress industry.
- Portfolio statistics reflect some of the performance challenges during the quarter. The average price of loans in the portfolio declined by 0.08% from 96.23% of par to 96.15 of par. This compares to an increase in the Index average price of 0.47% during the period. The weighted average spread of the portfolio declined modestly to 365 basis points from 376 basis points. Meanwhile the yield to an assumed 3-year maturity fell by 30 basis points to 7.37% while the 3-year Discount Margin declined 16 basis points to 498 basis points. Note that the portfolio yield decline can largely be attributed to the 26 basis point decline in three-month Libor during the quarter as interest rates across the curve fell following continued dovish signals coming from the Federal Reserve.

### **TIPS, ETI , Cash Commentary**

As of June 30, 2019, Fixed Income – TIPS, ETI and Cash was \$391.37 million (6.0%) of the NYBERS Total Fund.

### **Fixed Income – TIPS Managers**

- **SSgA (TIPS)** returned +2.85% in the quarter, slightly below the +2.86% return for its Barclays Global Inflation Linked Index. SSgA (TIPS) returned +4.83% for the fiscal year as of June 30, 2019, slightly below the +4.84% return for its Barclays Global Inflation Linked Index.

★ Segal Marco Advisors

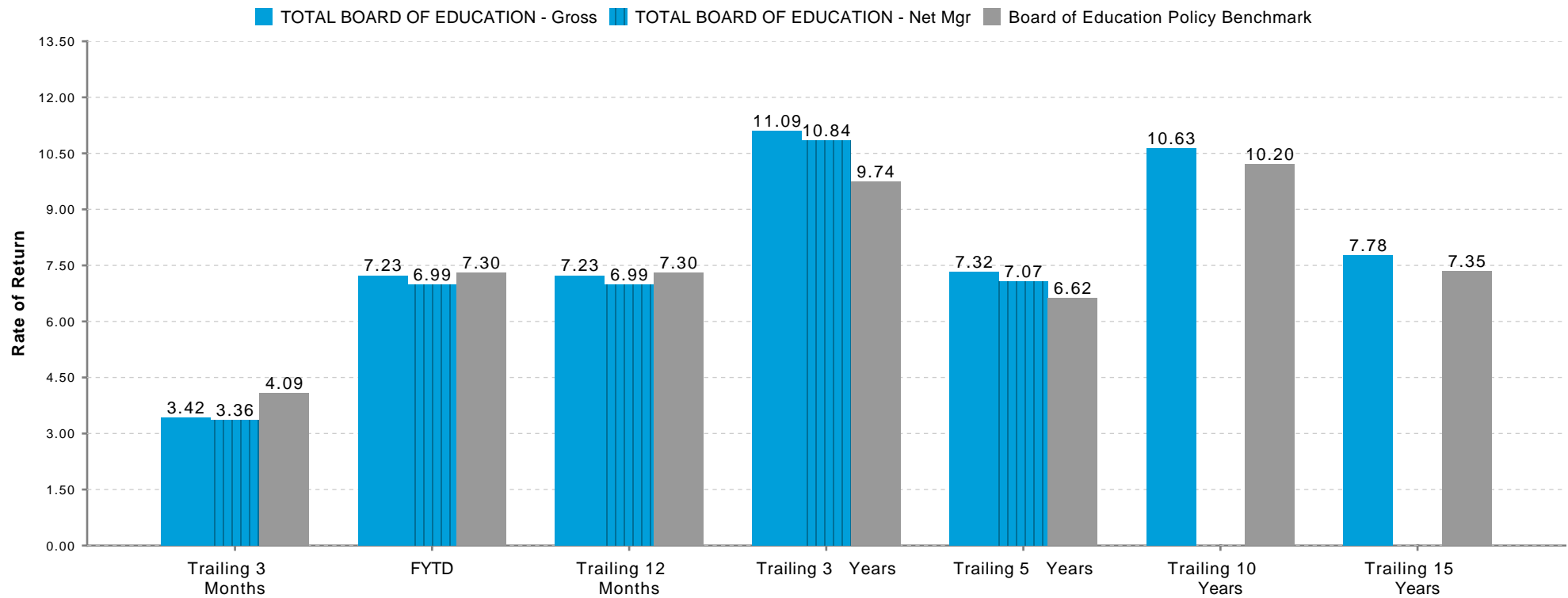
## Total Portfolio Returns: June 30, 2019



TOTAL BOARD OF EDUCATION

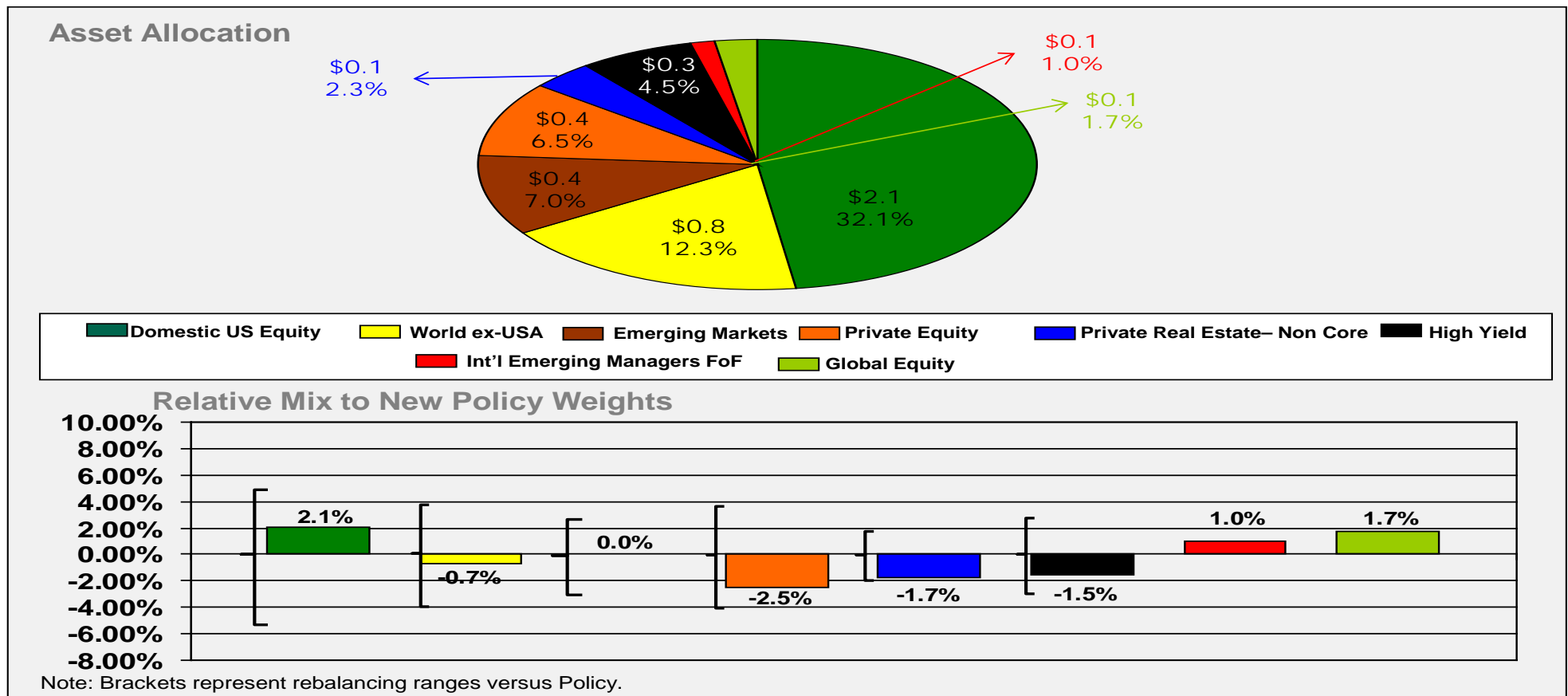
**Market Value (Billions)**

\$6.4

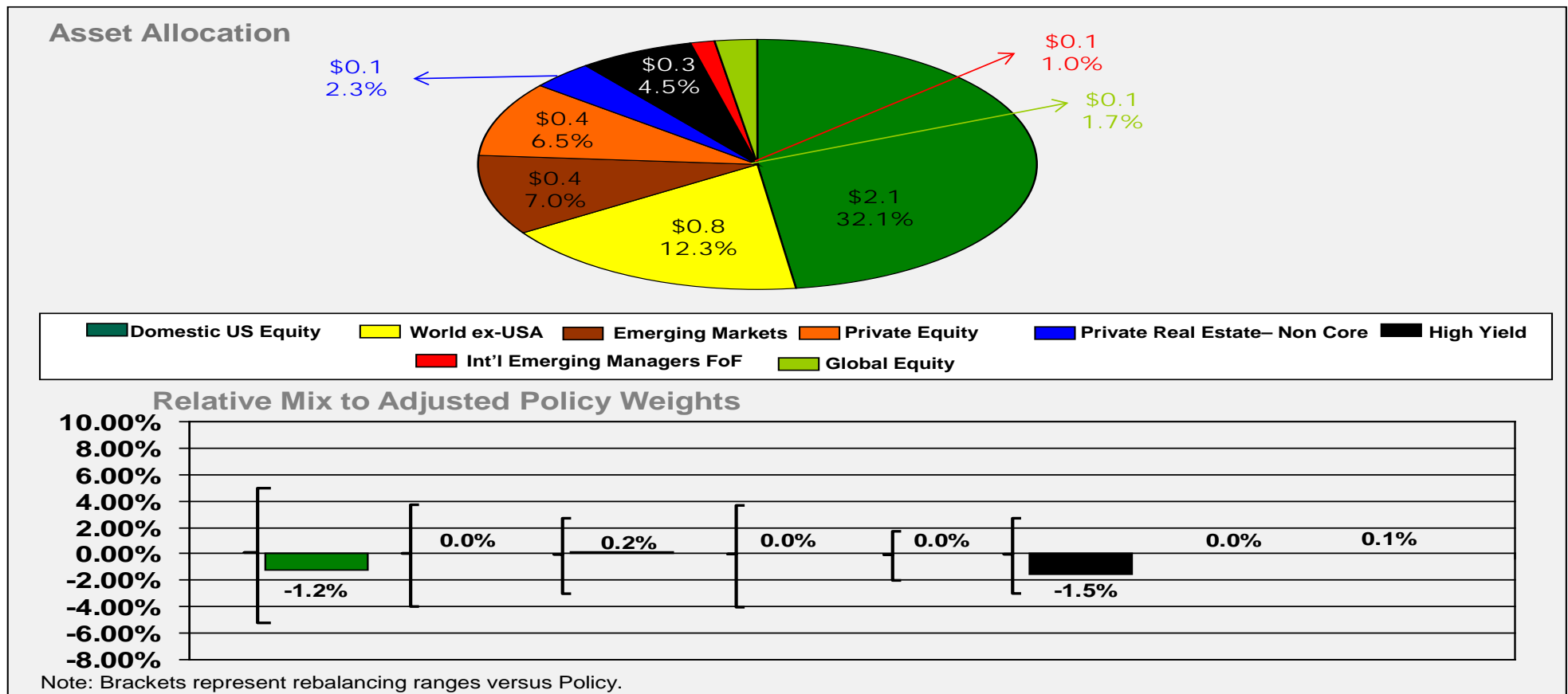


	Plan 3 Years	Benchmark 3 Years	Plan 5 Years	Benchmark 5 Years	Plan 10 Years	Benchmark 10 Years
Standard Deviation						
TOTAL BOARD OF EDUCATION	6.8	6.5	7.3	7.1	8.8	8.7

## Portfolio Asset Allocation – Growth

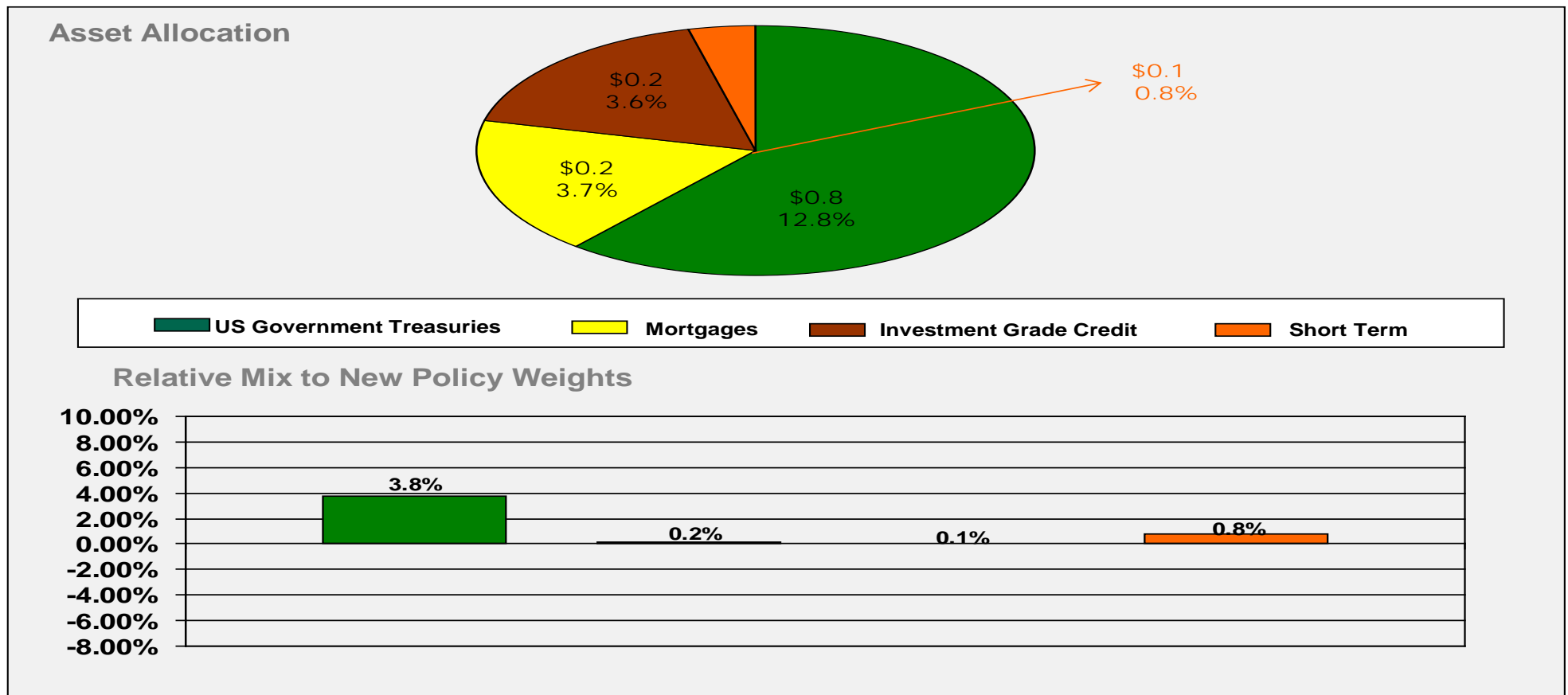


## Portfolio Asset Allocation – Growth

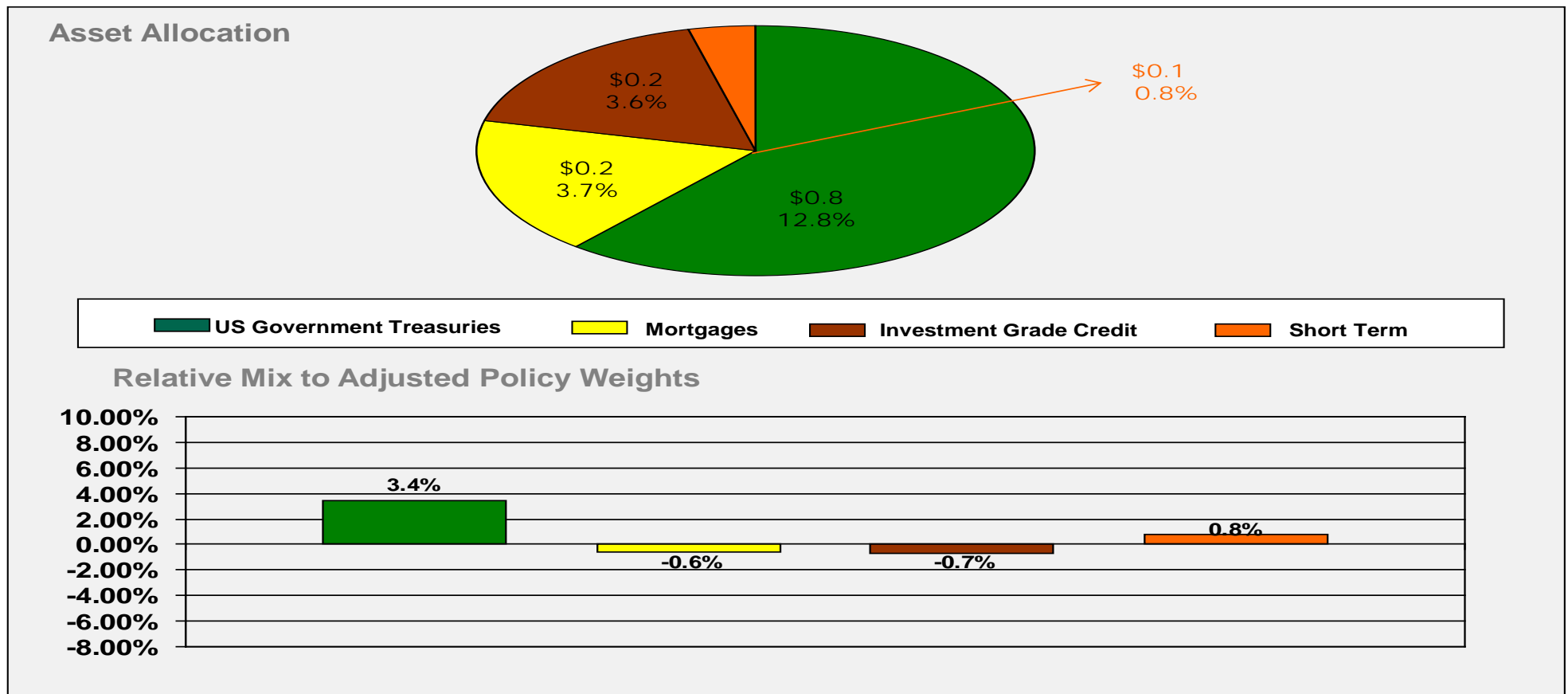


Note: On June 28, 2019 BERS' combined Fixed Income and Cash portfolios have a duration of 6.2 years. The duration of the Barclays US Aggregate Index was 5.7 years on that date.

## Portfolio Asset Allocation – Deflation Protection



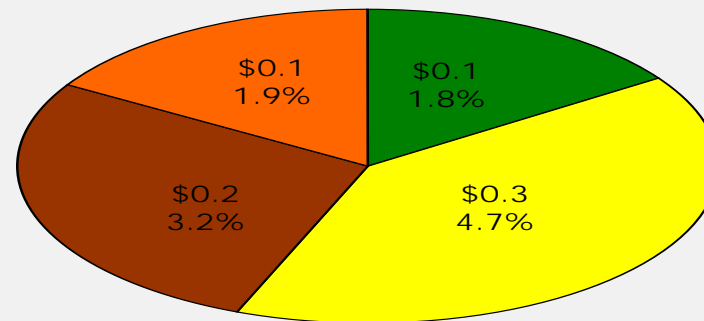
## Portfolio Asset Allocation – Deflation Protection



Note: On June 28, 2019 BERS' combined Fixed Income and Cash portfolios have a duration of 6.2 years. The duration of the Barclays US Aggregate Index was 5.7 years on that date.

## Portfolio Asset Allocation – Inflation Protection

### Asset Allocation



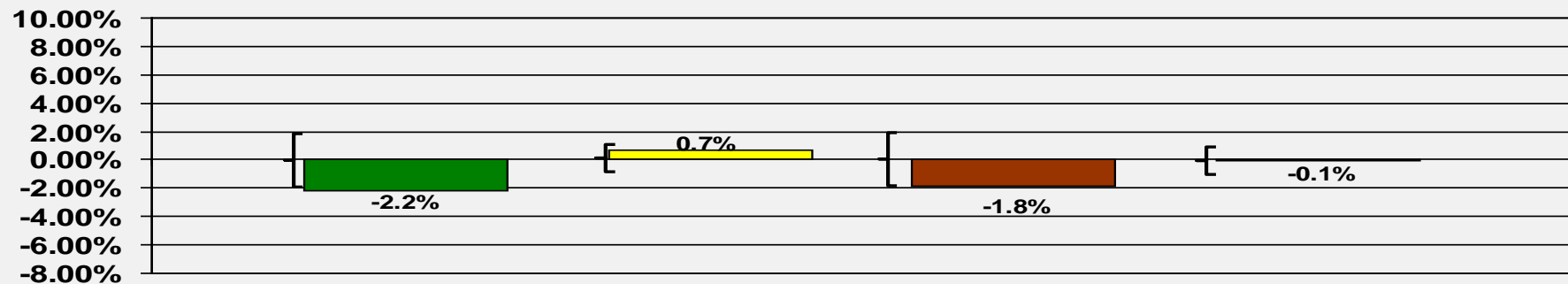
Infrastructure

US TIPS

Real Estate - Core

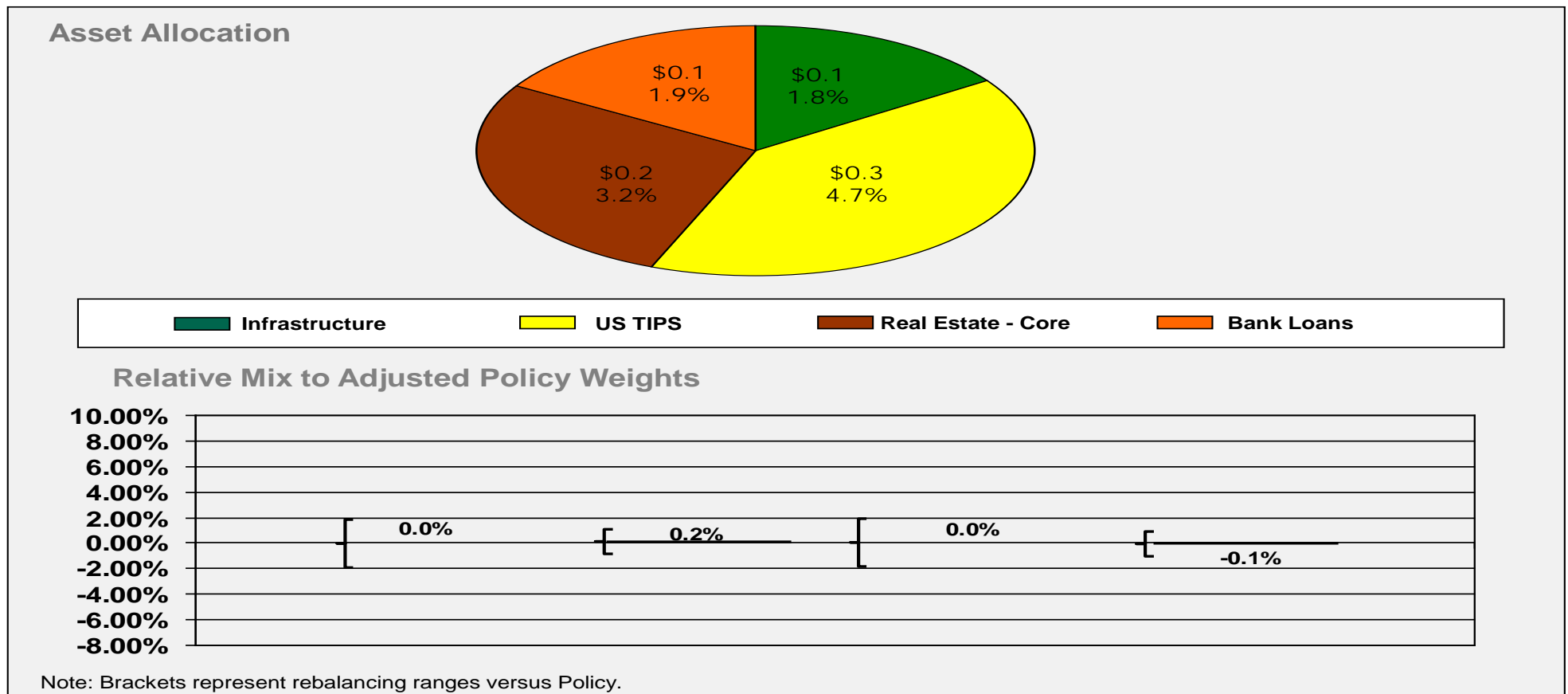
Bank Loans

### Relative Mix to New Policy Weights



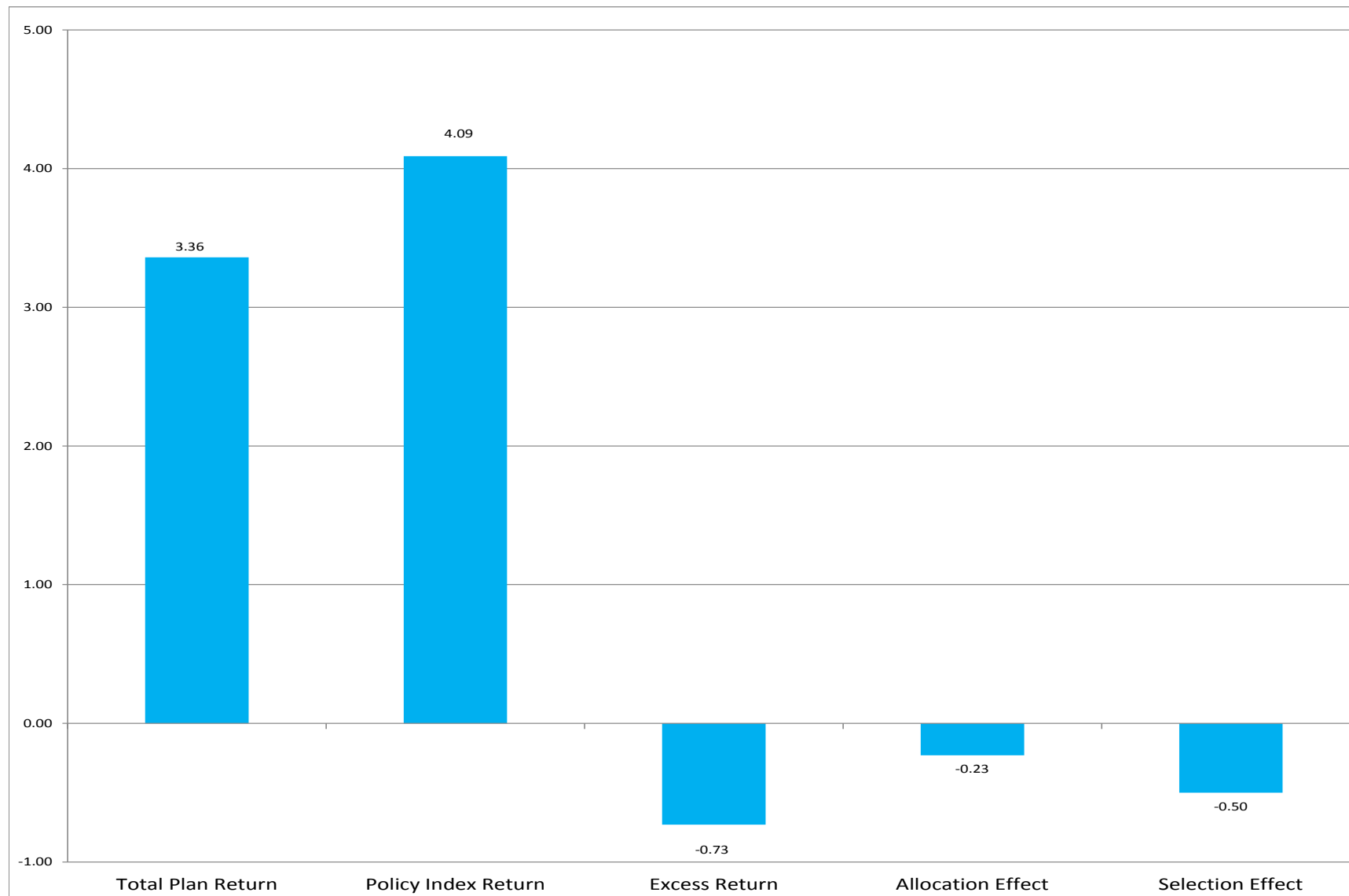
Note: Brackets represent rebalancing ranges versus Policy.

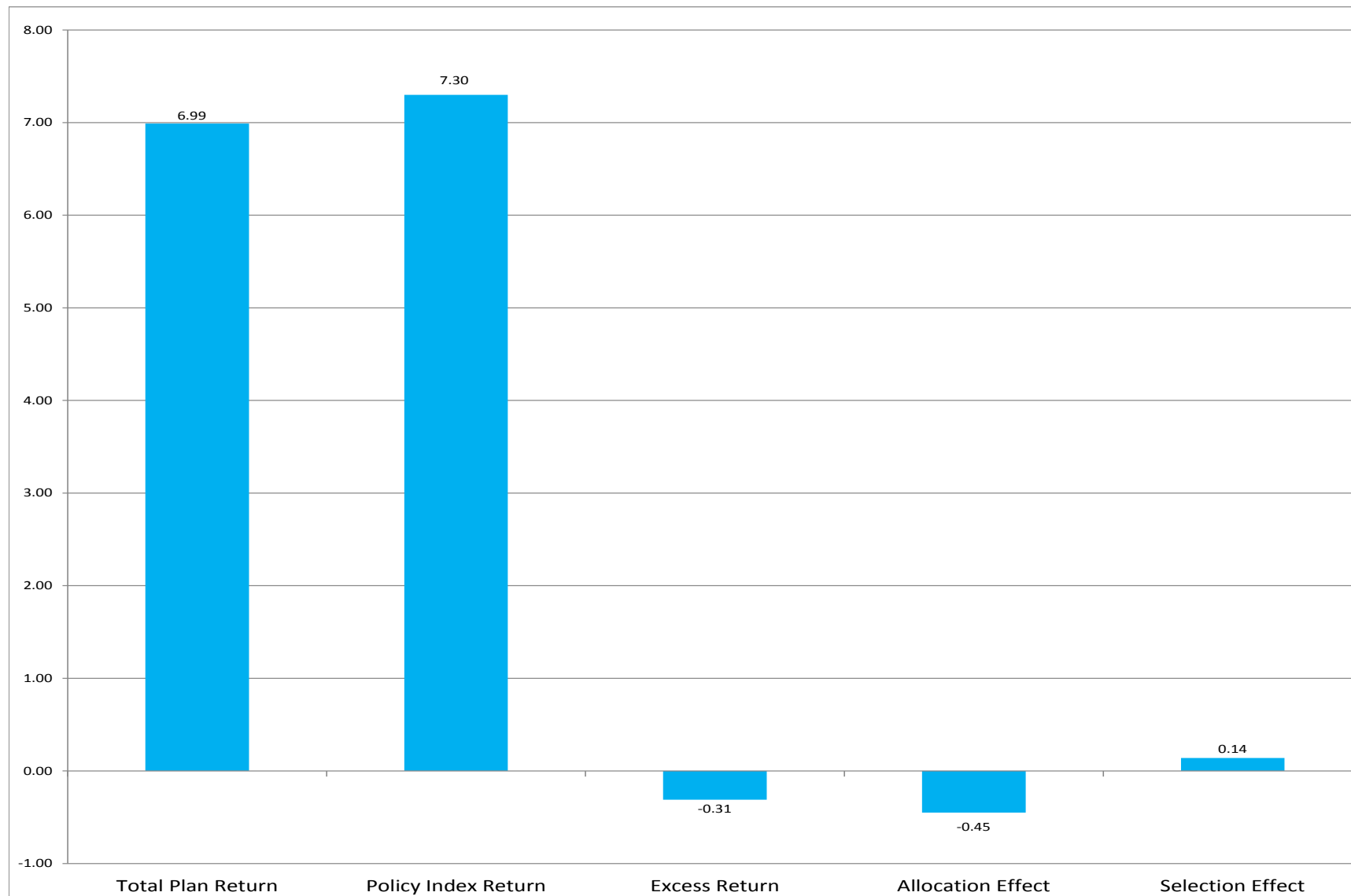
## Portfolio Asset Allocation – Inflation Protection

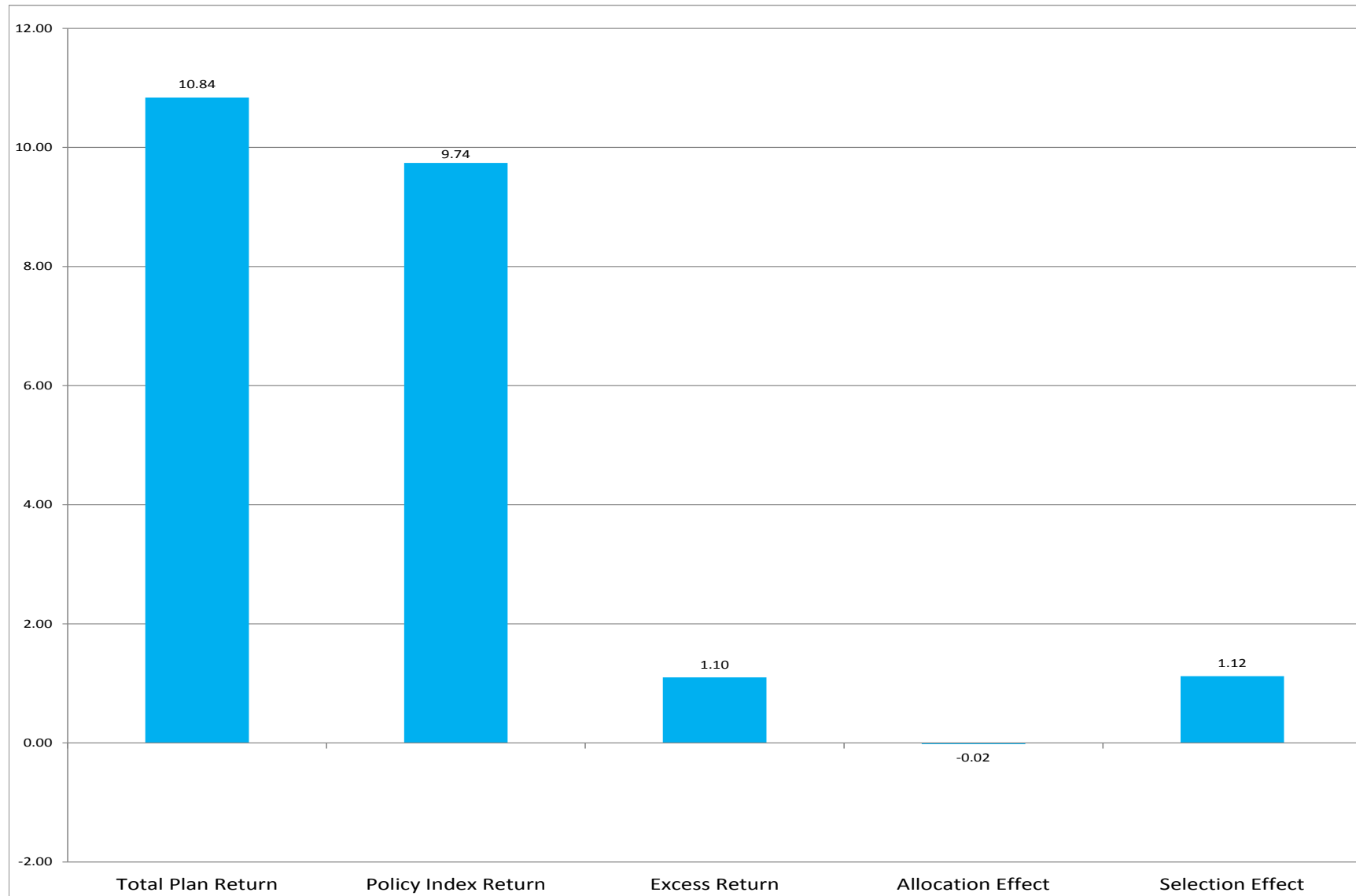


Note: On June 28, 2019 BERS' combined Fixed Income and Cash portfolios have a duration of 6.2 years. The duration of the Barclays US Aggregate Index was 5.7 years on that date.









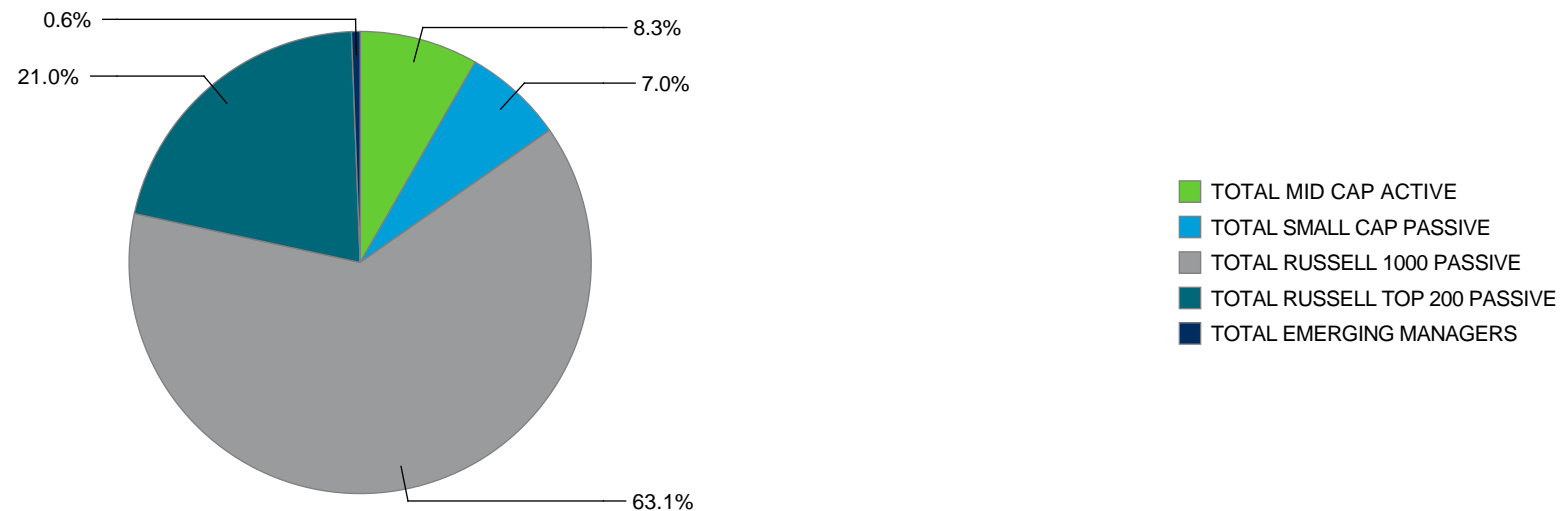
Allocation Effect - Asset Class Breakdown				
	<u>Quarter</u>	<u>FYTD</u>	<u>3 Years</u>	<u>Benchmark</u>
TOTAL BOARD OF EDUCATION	-0.23	-0.45	-0.02	Board of Education Policy Benchmark
TOTAL DOMESTIC EQUITY	-0.02	-0.08	-0.03	RUSSELL 3000
TOTAL WORLD ex-USA	-0.01	0.01	0.06	MSCI World ex USA IMI Net
TOTAL GLOBAL EQUITY	0.00	-0.02	0.00	MSCI AC WORLD
TOTAL EMERGING MARKETS	-0.02	-0.07	-0.05	MSCI Emerging Markets
TOTAL INTERNATIONAL FOF	0.00	0.00	0.00	MSCI ACWI Ex US IMI Net
TOTAL PRIVATE EQUITY	-0.03	0.00	0.00	Russell 3K + 300bps
TOTAL PRIVATE REAL ESTATE - CORE	0.01	0.01	0.00	NCREIF ODCE net
TOTAL PRIVATE REAL ESTATE - NON CORE	0.00	0.00	0.01	NCREIF ODCE net + 200bps
TOTAL INFRASTRUCTURE	0.00	0.00	0.00	CPI + 4%
TOTAL US TREASURY SHORT TERM	-0.11	-0.02	-0.14	FTSE USBIG Treasury 1-3 Y Index
TOTAL ACTIVE GOVERNMENT	-0.03	-0.12	0.21	NYC - Treasury Agency Plus Five
TOTAL INVESTMENT GRADE CREDIT	-0.01	-0.04	-0.04	NYC - Investment Grade Credit
TOTAL MORTGAGES	0.00	-0.02	0.03	FTSE MORTGAGE INDEX
TOTAL ETI	0.00	0.00	0.00	ETI Custom Benchmark
TOTAL HIGH YIELD	0.02	-0.02	0.03	High Yield Custom Benchmark
TOTAL BANK LOANS	0.00	0.00	-0.01	Credit Suisse Lev Loan Index
TOTAL TIPS MANAGERS	-0.01	-0.02	0.00	BBG BARC Gbl Inf-Lk: US TIPS (Dly)
TOTAL CASH	-0.02	-0.05	-0.12	

Selection Effect - Asset Class Breakdown				
	<u>Quarter</u>	<u>FYTD</u>	<u>3 Years</u>	<u>Benchmark</u>
TOTAL BOARD OF EDUCATION	-0.50	0.14	1.12	Board of Education Policy Benchmark
TOTAL DOMESTIC EQUITY	0.00	-0.01	0.16	RUSSELL 3000
TOTAL WORLD ex-USA	-0.01	-0.14	0.66	MSCI World ex USA IMI Net
TOTAL GLOBAL EQUITY	0.05	0.08	0.03	MSCI AC WORLD
TOTAL EMERGING MARKETS	0.02	-0.14	0.02	MSCI Emerging Markets
TOTAL INTERNATIONAL FOF	0.01	0.00	0.00	MSCI ACWI Ex US IMI Net
TOTAL PRIVATE EQUITY	-0.63	0.13	-0.07	Russell 3K + 300bps
TOTAL PRIVATE REAL ESTATE - CORE	0.03	0.10	0.04	NCREIF ODCE net
TOTAL PRIVATE REAL ESTATE - NON CORE	0.01	0.07	0.12	NCREIF ODCE net + 200bps
TOTAL INFRASTRUCTURE	0.02	0.09	0.09	CPI + 4%
TOTAL US TREASURY SHORT TERM	0.00	0.00	0.00	FTSE USBIG Treasury 1-3 Y Index
TOTAL ACTIVE GOVERNMENT	0.00	-0.01	0.00	NYC - Treasury Agency Plus Five
TOTAL INVESTMENT GRADE CREDIT	0.01	0.00	0.01	NYC - Investment Grade Credit
TOTAL MORTGAGES	0.01	0.01	0.01	FTSE MORTGAGE INDEX
TOTAL ETI	0.01	0.01	0.00	ETI Custom Benchmark
TOTAL HIGH YIELD	-0.01	-0.01	0.00	High Yield Custom Benchmark
TOTAL BANK LOANS	-0.01	-0.02	-0.01	Credit Suisse Lev Loan Index
TOTAL TIPS MANAGERS	0.00	0.00	0.00	BBG BARC Gbl Inf-Lk: US TIPS (Dly)
TOTAL CASH	0.00	-0.01	0.00	

## Total Domestic Equity Asset Allocations: June 30, 2019



	<u>Market Value (Billions)</u>	<u>% of Plan</u>
TOTAL DOMESTIC EQUITY	\$2.1	32.1

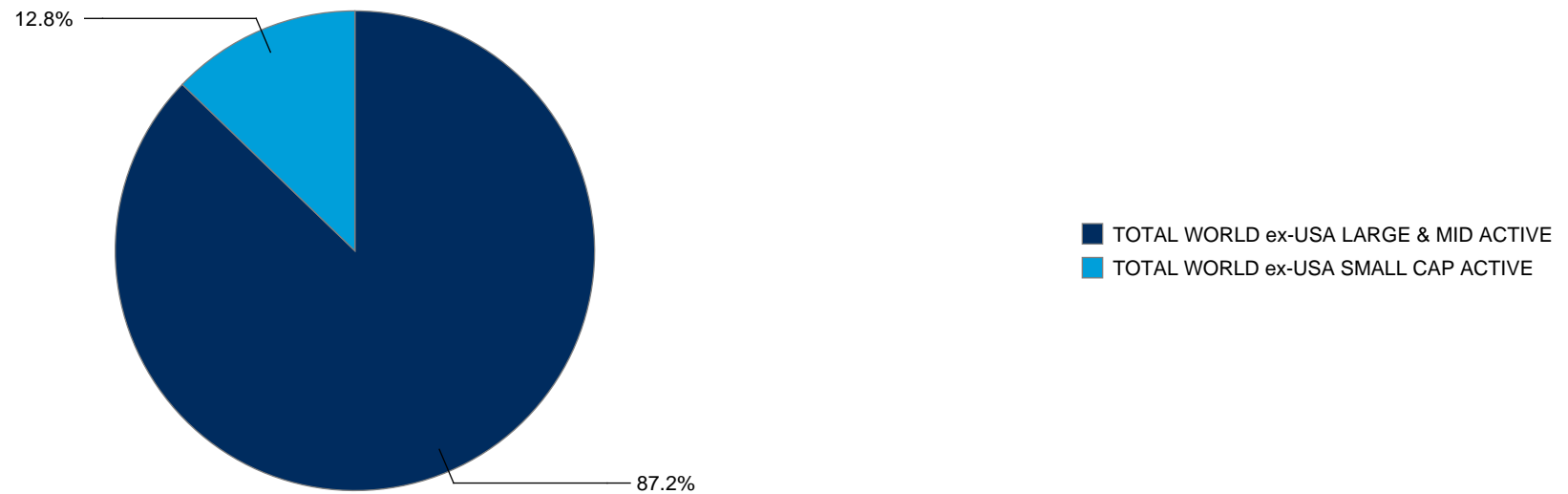


	<u>Policy Weight</u>	<u>Actual Weight</u>	<u>Under/Over Weight</u>	<u>Quarterly Returns</u>		
				<u>Fund</u>	<u>Benchmark</u>	<u>Excess</u>
TOTAL MID CAP ACTIVE	7.0	8.3	1.3	4.4	4.1	0.3
TOTAL SMALL CAP PASSIVE	7.1	7.0	(0.1)	2.0	2.1	(0.0)
TOTAL RUSSELL 1000 PASSIVE	67.5	63.1	(4.4)	4.2	4.2	(0.0)
TOTAL RUSSELL TOP 200 PASSIVE	17.9	21.0	3.1	4.3	4.3	(0.0)
TOTAL EMERGING MANAGERS	0.6	0.6	(0.0)	2.0	2.1	(0.1)

## World ex-USA Equity Asset Allocation: June 30, 2019



	<u>Market Value (Millions)</u>	<u>% of Plan</u>
TOTAL WORLD ex-USA	\$791.2	12.3

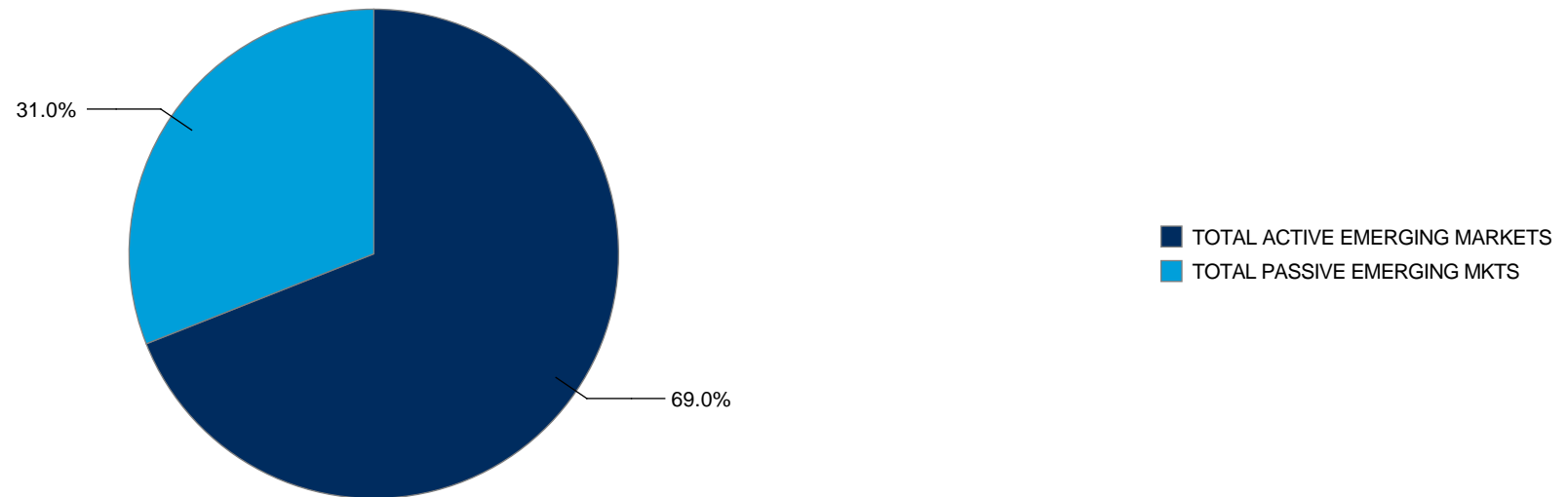


	<u>Asset Weight</u>	<u>Quarterly Returns</u>		
		<u>Fund</u>	<u>Benchmark</u>	<u>Excess</u>
TOTAL WORLD ex-USA LARGE & MID ACTIVE	87.21	3.56	3.79	(0.23)
TOTAL WORLD ex-USA SMALL CAP ACTIVE	12.79	2.08	2.37	(0.29)
TOTAL WORLD ex-USA	100.00	3.37	3.50	(0.13)

## Emerging Markets Equity Asset Allocation: June 30, 2019



	<u>Market Value (Millions)</u>	<u>% of Plan</u>
TOTAL EMERGING MARKETS	\$448.8	7.0

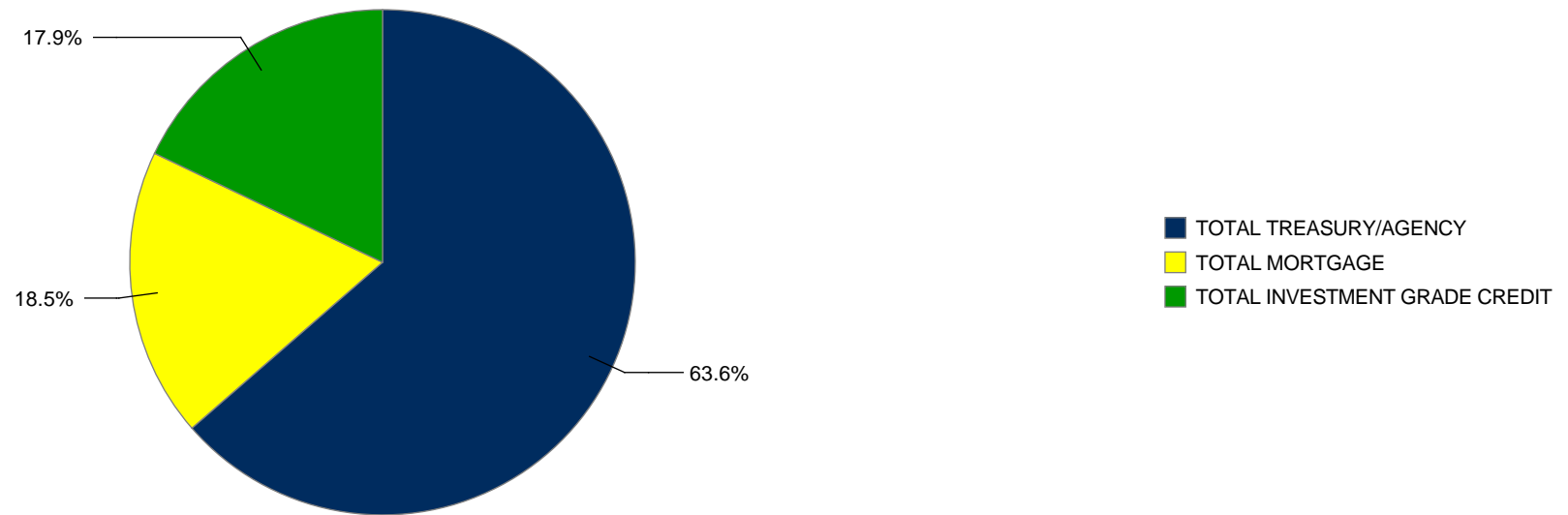


	<u>Asset Weight</u>	<u>Quarterly Returns</u>		
		<u>Fund</u>	<u>Benchmark</u>	<u>Excess</u>
TOTAL ACTIVE EMERGING MARKETS	69.03	1.00	0.61	0.39
TOTAL PASSIVE EMERGING MARKETS	30.97	0.70	0.61	0.09
TOTAL EMERGING MARKETS	100.00	0.91	0.61	0.30

## Structured Fixed Income Asset Allocation: June 30, 2019



	<u>Market Value (Billions)</u>	<u>% of Plan</u>
TOTAL STRUCTURED + ETI	\$1.3	20.2



	<u>Policy Weight</u>	<u>Asset Weight</u>	<u>Under/Over Weight</u>	<u>Quarterly Returns</u>		
				<u>Fund</u>	<u>Benchmark</u>	<u>Excess</u>
TOTAL TREASURY/AGENCY	61.54	63.56	2.02	3.51	4.56	(1.05)
TOTAL MORTGAGE	19.23	18.55	(0.68)	2.48	2.09	0.39
TOTAL INVESTMENT GRADE CREDIT	19.23	17.89	(1.34)	4.31	4.07	0.23

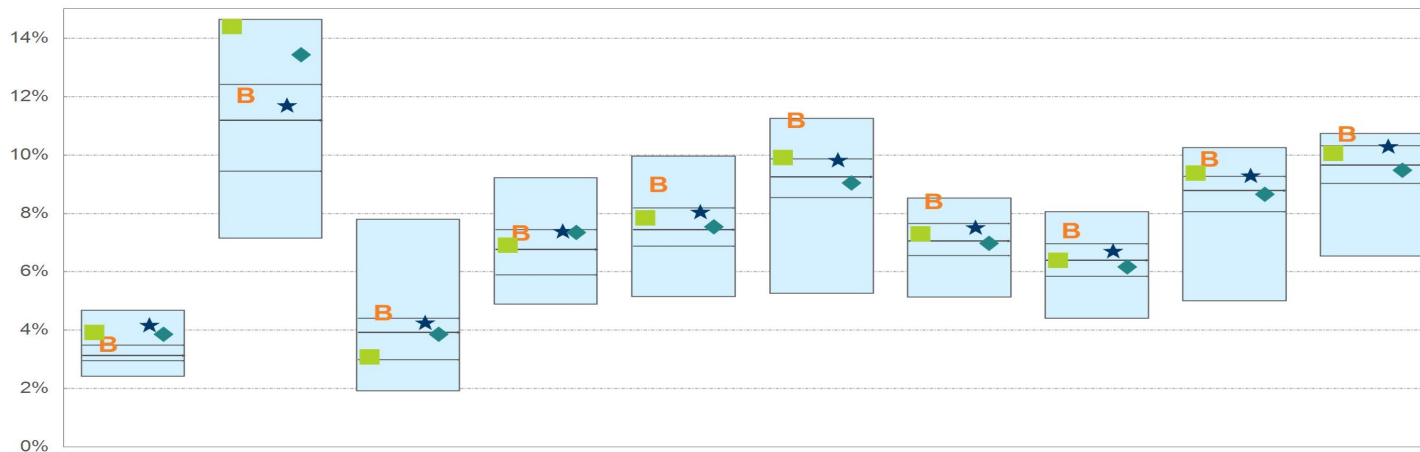


Through June 30, 2019



## City of New York Performance Comparison

Total Returns of Master Trusts - Public : Plans > \$1 Billion  
Cumulative Periods Ending : June 30, 2019



Percentile Rankings	1 Qtr	2 Qtrs	3 Qtrs	1 Year	2 Years	3 Years	4 Years	5 Years	7 Years	10 Years
5th	4.68	14.65	7.80	9.22	9.96	11.26	8.52	8.06	10.26	10.74
25th	3.48	12.42	4.41	7.44	8.18	9.87	7.66	6.96	9.27	10.31
50th	3.14	11.19	3.92	6.77	7.44	9.25	7.06	6.39	8.79	9.65
75th	2.95	9.45	2.99	5.90	6.88	8.54	6.56	5.85	8.05	9.02
95th	2.42	7.16	1.92	4.90	5.15	5.26	5.14	4.41	5.01	6.54
No. Of Obs	58	58	57	57	57	57	57	57	57	54
B Total System - BOE	3.42 (25)	11.95 (30)	4.50 (19)	7.23 (28)	8.90 (13)	11.09 (5)	8.31 (6)	7.32 (9)	9.77 (11)	10.63 (6)
★ Board of Ed Policy Ben	4.09 (9)	11.61 (33)	4.16 (35)	7.30 (26)	7.96 (28)	9.74 (32)	7.42 (30)	6.62 (35)	9.21 (25)	10.20 (25)
■ Public Mkt Equiv 25	3.83 (14)	14.31 (6)	2.98 (75)	6.81 (46)	7.75 (41)	9.82 (28)	7.20 (44)	6.29 (51)	9.28 (23)	9.96 (26)
◆ Public Mkt Equiv 35	3.77 (18)	13.34 (11)	3.77 (55)	7.25 (26)	7.44 (50)	8.95 (60)	6.88 (62)	6.07 (62)	8.56 (57)	9.38 (65)

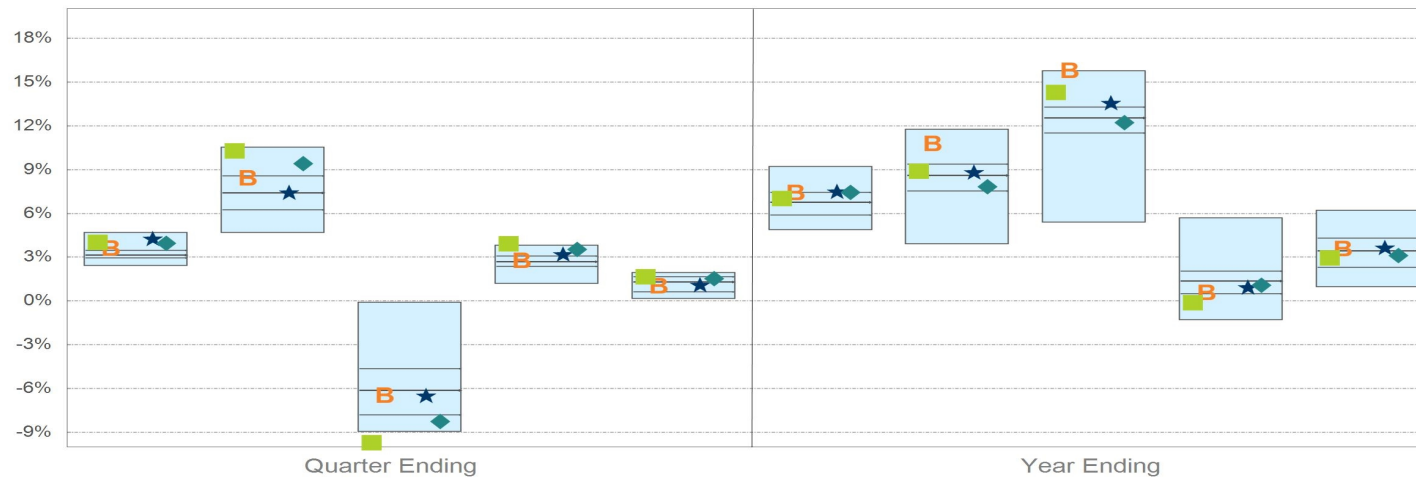
Wilshire Trust Universe Comparison Service® (TUCS®)

Through June 30, 2019



## City of New York Performance Comparison

Total Returns of Master Trusts - Public : Plans > \$1 Billion  
Consecutive Time Periods: June 30, 2019



Percentile Rankings	Jun 19	Mar 19	Dec 18	Sep 18	Jun 18	Jun 19	Jun 18	Jun 17	Jun 16	Jun 15
5th	4.68	10.53	-0.08	3.81	1.95	9.22	11.76	15.77	5.71	6.20
25th	3.48	8.56	-4.63	3.07	1.65	7.44	9.37	13.27	2.03	4.30
50th	3.14	7.41	-6.12	2.70	1.31	6.77	8.59	12.54	1.38	3.44
75th	2.95	6.25	-7.82	2.37	0.62	5.90	7.53	11.50	0.51	2.30
95th	2.42	4.70	-8.93	1.20	0.17	4.90	3.92	5.41	-1.28	0.98
No. Of Obs	58	58	57	58	58	57	58	58	58	58
<b>B</b> Total System - BOE	3.42 (25)	8.24 (35)	-6.65 (55)	2.61 (55)	0.85 (71)	7.23 (28)	10.59 (6)	15.60 (5)	0.41 (76)	3.41 (50)
★ Board of Ed Policy Ben	4.09 (9)	7.23 (53)	-6.68 (55)	3.02 (25)	0.92 (66)	7.30 (26)	8.63 (46)	13.39 (23)	0.75 (64)	3.46 (48)
■ Public Mkt Equiv 25	3.83 (14)	10.10 (6)	-9.91 (99)	3.72 (5)	1.45 (41)	6.81 (46)	8.70 (42)	14.09 (14)	-0.30 (87)	2.74 (62)
◆ Public Mkt Equiv 35	3.77 (18)	9.22 (14)	-8.45 (82)	3.35 (19)	1.35 (44)	7.25 (26)	7.64 (73)	12.03 (66)	0.89 (60)	2.91 (58)

Wilshire Trust Universe Comparison Service® (TUCS®)

# Actual and Estimated Fees

Through June 30, 2019



## BOARD OF EDUCATION RETIREMENT SYSTEM ACTUAL FEES FOR FISCAL YEAR ENDED JUNE 30, 2018 AND ESTIMATED FEES FOR FY 2019 UPDATED THROUGH SEPTEMBER 2018

INVESTMENT STYLE (EQUITIES)	Actual 2018								Estimates 2019		
	Avg. MV FY 2018 (\$MM)	Mgmt. Fees (\$M)	Partnership Expenses (\$M)	Mgmt. Fees / Partnership Expenses in BPS	Incentive Fees in (\$M)	Incentive Fees in BPS	Total Fees & Expenses in (\$M)	Total Fees & Expenses in BPS	Avg. MV FYTD 09-30- 18 (\$MM)	Mgmt. Fees (\$M)	Mgmt. Fees in BPS
Total US Equities	3,118.43	568.55	-	1.82	529.66	-	1,098.20	3.52	1,938.83	615.94	3.18
Mid Cap Active	149.30	442.10		29.61	529.66	35.48	971.75	65.09	167.75	501.57	29.90
Mid Cap Core	149.30	442.10		29.61	529.66	35.48	971.75	65.09	167.75	501.57	29.90
Active Emerging Managers (U.S. Equities)	11.76	54.68		46.50	-	-	54.68	46.50	12.56	61.88	49.25
Total US Active Equities	161.06	496.77		30.84	529.66	32.89	1,026.43	63.73	180.32	563.44	31.25
Small Cap Passive											
Small Cap Passive	164.10	7.10		0.43	-	-	7.10	0.43	157.67	6.61	0.42
Russell / S&P Passive											
Russell 1000 Growth Passive	566.63	26.76		0.47	-	-	26.76	0.47	0.77	-	-
Russell 1000 Value Passive	554.15	26.00		0.47	-	-	26.00	0.47	0.65	-	-
Russell 1000 Core Passive	1,285.41	6.74		0.05	-	-	6.74	0.05	1,176.24	23.24	0.20
Passive Russell 3000	-	-		-	-	-	-	-	-	-	-
Passive S&P 500	-	-		-	-	-	-	-	-	-	-
Passive Russell Top 200	387.09	5.18		0.13	-	-	5.18	0.13	423.19	22.65	0.54
Total US Passive Equities	2,957.37	71.78		0.24	-	-	71.78	0.24	1,758.51	52.50	0.30

# Actual and Estimated Fees

Through June 30, 2019



## BOARD OF EDUCATION RETIREMENT SYSTEM ACTUAL FEES FOR FISCAL YEAR ENDED JUNE 30, 2018 AND ESTIMATED FEES FOR FY 2019 UPDATED THROUGH SEPTEMBER 2018

	Actual 2018						Estimates 2019				
	Avg. MV FY 2018 (\$MM)	Mgmt. Fees (\$M)	Partnership Expenses (\$M)	Mgmt. Fees / Partnership Expenses in BPS	Incentive Fees in (\$M)	Incentive Fees in BPS	Total Fees & Expenses in (\$M)	Total Fees & Expenses in BPS	Avg. MV FYTD 09-30- 18 (\$MM)	Mgmt. Fees (\$M)	Mgmt. Fees in BPS
<b>Total International Equities</b>	<b>1,317.97</b>	<b>3,501.48</b>		<b>26.57</b>	-	-	<b>3,501.48</b>	<b>26.57</b>	<b>1,227.38</b>	<b>3,077.96</b>	<b>25.08</b>
Global Equity	<b>50.05</b>	<b>32.52</b>			-	-	<b>32.52</b>	<b>6.50</b>	<b>100.90</b>	<b>450.44</b>	<b>44.64</b>
<b>Total Global Equities</b>	<b>50.05</b>	<b>32.52</b>			-	-	<b>32.52</b>	<b>6.50</b>	<b>100.90</b>	<b>450.44</b>	<b>44.64</b>
Active EAFE Equities	780.61	2,101.42		26.92	-	-	2,101.42	26.92	720.35	1,778.99	24.70
World Ex-USA Large & Mid Active	662.19	1,715.37		25.90	-	-	1,715.37	25.90	612.91	1,426.67	23.28
World Ex-USA Small Cap Active	118.41	386.05		32.60	-	-	386.05	32.60	107.42	352.33	32.80
Total World Ex USA	0.01	-		-	-	-	-	-	0.01	-	-
Active Emerging Markets	338.65	1,132.20		33.43	-	-	1,132.20	33.43	310.11	1,048.63	33.81
Total Active Int'l Fund of Funds	62.12	215.53		34.70	-	-	215.53	34.70	60.81	212.63	34.97
<b>Total Active International Equities</b>	<b>1,181.37</b>	<b>3,449.16</b>		<b>29.20</b>	-	-	<b>3,449.16</b>	<b>29.20</b>	<b>1,091.27</b>	<b>3,040.25</b>	<b>27.86</b>
Int'l Passive Equities											
World Ex-USA Small Cap Passive	-	-		-	-	-	-	-	-	-	-
World Ex-USA Large & Mid Cap Passive	-	-		-	-	-	-	-	-	-	-
Passive Global	-	-		-	-	-	-	-	-	-	-
Passive Emerging Markets	136.60	52.32		3.83	-	-	52.32	3.83	136.11	37.71	2.77
<b>Total Int'l Passive Equities</b>	<b>136.60</b>	<b>52.32</b>		<b>3.83</b>	-	-	<b>52.32</b>	<b>3.83</b>	<b>136.11</b>	<b>37.71</b>	<b>2.77</b>
<b>REITS Active Equities</b>	-	-		-	-	-	-	-	-	-	-

# Actual and Estimated Fees

Through June 30, 2019



## BOARD OF EDUCATION RETIREMENT SYSTEM ACTUAL FEES FOR FISCAL YEAR ENDED JUNE 30, 2018 AND ESTIMATED FEES FOR FY 2019 UPDATED THROUGH SEPTEMBER 2018

	Actual 2018						Estimates 2019				
	Avg. MV FY 2018 (\$MM)	Mgmt. Fees (\$M)	Partnership Expenses (\$M)	Mgmt. Fees / Partnership Expenses in BPS	Incentive Fees in (\$M)	Incentive Fees in BPS	Total Fees & Expenses in (\$M)	Total Fees & Expenses in BPS	Avg. MV FYTD 09-30- 18 (\$MM)	Mgmt. Fees (\$M)	Mgmt. Fees in BPS
INVESTMENT STYLE (FIXED INCOME)											
Total Fixed Income	1,884.19	1,818.15		9.65	-	-	1,818.15	9.65	2,094.18	1,766.31	8.43
Structured Program	1,023.05	459.17		4.49	-	-	459.17	4.49	1,315.40	478.56	3.64
Government Treas/Agency Sector	573.00	164.63		2.87	-	-	164.63	2.87	903.28	206.87	2.29
Long Duration Treasury	-	-		-			-	-	-	-	-
Mortgage Sector	184.50	79.45		4.31	-	-	79.45	4.31	191.42	83.96	4.39
Investment Grade Credit Sector	265.55	215.09		8.10	-	-	215.09	8.10	220.70	187.74	8.51
Developing Managers	-	-		-	-	-	-	-	-	-	-
Emerging Managers	-	-		-	-	-	-	-	-	-	-
TIPS	266.64	13.08		0.49	-	-	13.08	0.49	287.43	14.50	0.50
Active TIPS Managers	-	-		-	-	-	-	-	-	-	-
Passive TIPS Managers	266.64	13.08		0.49	-	-	13.08	0.49	287.43	14.50	0.50
High Yield	388.07	876.53		22.59	-	-	876.53	22.59	276.45	788.23	28.51
Bank Loans	117.61	388.22		33.01	-	-	388.22	33.01	121.71	402.78	33.09
Convertible Bonds	-	-		-	-	-	-	-	-	-	-
ETI - Access - RBC	9.20	16.63		18.08	-	-	16.63	18.08	9.58	17.73	18.50
ETI - AFL-CIO HIT	15.97	64.51		40.39	-	-	64.51	40.39	15.87	64.51	40.65
Total Public Markets (Externally managed)	6,307.00	5,920.69		9.39	529.66	0.84	6,450.34	10.23	5,293.55	5,910.66	11.17
Other ETI Programs	9.10	-		-		-	-	-	9.28	-	-
In-House Short Term	54.55	-		-	-	-	-	-	58.46	-	-
Total Public Markets	6,370.64	5,920.69	-	9.29	529.66	0.83	6,450.34	10.13	5,361.29	5,910.66	11.02

# Actual and Estimated Fees

Through June 30, 2019



## BOARD OF EDUCATION RETIREMENT SYSTEM ACTUAL FEES FOR FISCAL YEAR ENDED JUNE 30, 2018 AND ESTIMATED FEES FOR FY 2019 UPDATED THROUGH SEPTEMBER 2018

	Actual 2018								Estimates 2019		
	Avg. MV FY 2018 (\$MM)	Mgmt. Fees (\$M)	Partnership Expenses (\$M)	Mgmt. Fees / Partnership Expenses in BPS	Incentive Fees in (\$M)	Incentive Fees in BPS	Total Fees & Expenses in (\$M)	Total Fees & Expenses in BPS	Avg. MV FYTD 09-30- 18 (\$MM)	Mgmt. Fees (\$M)	Mgmt. Fees in BPS
INVESTMENT STYLE (PRIVATE MARKETS)											
Private Equity	327.67	4,852.60	1,844.09	204.38	1,404.32	42.86	8,101.02	247.23	367.21	4,909.51	133.70
Private Real Estate	333.61	3,542.06	1,464.12	150.06	2,619.98	78.53	7,626.16	228.59	344.23	3,827.96	111.20
Infrastructure	61.86	1,373.54	604.15	126.78	172.63	27.91	2,150.33	137.84	82.20	1,991.64	115.51
Total Private Markets	723.14	9,768.21	3,912.35	189.18	4,196.93	58.04	17,877.50	247.22	793.64	10,729.11	135.19
Total Overall	5,972.18	15,688.90	3,912.35	32.82	4,726.59	7.91	24,327.84	40.74	6,154.92	16,639.77	27.03

The overall carried interest and incentive fees paid by BOE in Fiscal Year 2018: 7.91 BPS

### General Footnotes:

1) Private Markets data reflect: carried interest realized and/or Incentive fees as stated by its corresponding partnership. Management fees reported are inclusive of partnership expenses associated with the partnership for the stated fiscal year.

2) Infrastructure's expense data is based off the total committed amounts rather than current market value due to its early fund life juncture.

3) Estimated Fees for the Public Markets data does not take into account major rebalancing shifts and is calculated at a fixed NAV. Estimates fees for the Private Markets data is based solely off gross management fee data and is not inclusive of any offsets. Both estimates are considered to be equitably conservative and should be construed as such. Estimates for FY 2018 for Private Equity is provided by the Consultant.

# Securities Lending Income

Through June 30, 2019



## NYC BOARD OF EDUCATION RETIREMENT SYSTEM SECURITIES LENDING INCOME June 30, 2019

	U. S. FIXED INCOME	U. S. EQUITY	INTERNATIONAL EQUITY	TOTAL
1989	70,000	-	-	70,000
1990	79,000	-	-	79,000
1991	111,000	-	-	111,000
1992	122,000	11,000	-	133,000
1993	79,000	32,000	15,000	126,000
1994	93,000	77,000	20,000	190,000
1995	112,000	93,000	12,000	217,000
1996	99,000	76,000	27,000	202,000
1997	101,000	126,000	40,000	267,000
1998	111,000	170,000	60,000	341,000
1999	159,000	263,000	100,000	522,000
2000	193,000	310,000	97,000	600,000
2001	295,000	208,000	159,000	662,000
2002	209,000	143,000	152,000	504,000
2003	153,000	158,000	195,000	506,000
2004	226,000	255,000	174,000	655,000
2005	384,000	479,000	217,000	1,080,000
2006	303,000	734,000	246,000	1,283,000
2007	593,000	1,208,000	272,000	2,073,000
2008	2,514,000	2,266,000	451,000	5,231,000
2009	698,000	1,416,000	367,000	2,481,000
2010	246,000	729,000	326,000	1,301,000
2011	340,000	943,000	599,000	1,882,000
2012	516,000	1,144,000	495,000	2,155,000
2013	349,000	1,325,000	446,000	2,120,000
2014	287,000	512,000	1,387,000	2,186,000
2015	338,000	429,000	1,985,000	2,752,000
2016	418,000	1,585,000	1,685,000	3,688,000
2017	686,000	1,015,000	1,215,000	2,916,000
2018	582,738	682,039	954,109	2,218,886
2019 (6 months)	136,631	378,504	443,543	958,678
Since Inception	10,603,369	16,767,543	12,139,652	39,510,564

**New York City  
Board of Education Retirement System**

# **Appendix A**

## **Consolidated Performance Report**



# Consolidated Performance Report

Through June 30, 2019



	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014	3 Year	5 Year	10 Year	ITD	Inception Date
<b>SYSTEM RETURN SUMMARY</b>															
5 BERS-TOTAL PORTFOLIO - GROSS	6,446	100.00	3.42	7.23	11.95	(2.81)	19.09	9.44	(0.20)	6.64	11.09	7.32	10.63	8.82	07/01/1987
BERS - ESTIMATED INVESTMENT FEES			(0.07)	(0.24)	(0.15)	(0.17)	(0.27)	(0.25)	(0.24)	(0.25)	(0.24)	(0.24)			
EST MANAGEMENT FEES - PUBLIC MARKET (ACCRUAL)			(0.04)	(0.11)	(0.07)	(0.10)	(0.10)	(0.13)	(0.14)	(0.15)	(0.11)	(0.12)			
EST MANAGEMENT FEES - ALTERNATIVE MARKETS (CASH)			(0.03)	(0.13)	(0.08)	(0.07)	(0.17)	(0.12)	(0.10)	(0.10)	(0.13)	(0.12)			
EST INCENTIVE FEES															
EST OTHER FEES															
EST FEE OFFSETS															
BERS-TOTAL PORTFOLIO - NET MGR			3.36	6.99	11.80	(2.98)	18.82	9.19	(0.44)	6.39	10.84	7.07			
BOARD OF EDUCATION POLICY BENCHMARK			4.09	7.30	11.61	(3.19)	16.63	8.66	(0.08)	6.93	9.74	6.62	10.20		
EXCESS RETURN			(0.73)	(0.31)	0.19	0.21	2.18	0.53	(0.36)	(0.53)	1.10	0.46	0.43		
<b>EQUITY RETURN DETAIL</b>															
18 BERS-TOTAL EQUITY (INCLUDES PE & RA) - GROSS	4,377	67.90	3.59	7.00	14.75	(4.41)	25.58	10.72	(0.13)	7.08	14.22	8.93	13.00	9.31	08/01/1993
ESTIMATED INVESTMENT FEES			(0.09)	(0.31)	(0.20)	(0.21)	(0.34)	(0.30)	(0.30)	(0.28)	(0.31)	(0.30)			
EST MANAGEMENT FEES			(0.09)	(0.31)	(0.20)	(0.21)	(0.34)	(0.30)	(0.30)	(0.28)	(0.31)	(0.30)			
EST INCENTIVE FEES															
EST OTHER FEES															
EST FEE OFFSETS															
BERS-TOTAL EQUITY (INCL PE & RA) - NET MGR			3.51	6.69	14.55	(4.61)	25.24	10.42	(0.43)	6.81	13.91	8.63			
26 BERS-TOTAL DOMESTIC EQUITY - GROSS	2,071	32.12	4.15	9.03	19.06	(4.61)	21.47	12.69	0.51	11.27	14.60	10.26	14.73	9.96	09/01/1991
ESTIMATED INVESTMENT FEES			(0.06)	(0.09)	(0.08)	(0.03)	(0.04)	(0.12)	(0.12)	(0.13)	(0.07)	(0.09)			
BERS-TOTAL DOMESTIC EQUITY - NET MGR			4.09	8.95	18.99	(4.64)	21.43	12.57	0.39	11.14	14.53	10.17			
RUSSELL 3000 (DAILY)			4.10	8.98	18.71	(5.24)	21.13	12.74	0.48	12.56	14.02	10.19	14.67	9.80	
EXCESS RETURN			(0.01)	(0.04)	0.28	0.60	0.29	(0.17)	(0.09)	(1.42)	0.50	(0.02)	0.06	0.15	
36 BERS-TOTAL SMALL CAP - GROSS	145	2.25	2.05	(3.27)	16.95	(10.89)	14.47	21.28	(6.44)	3.20	12.29	6.36	12.77	6.90	04/01/2004
ESTIMATED INVESTMENT FEES			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.08)	(0.15)	(0.00)	(0.04)			
BERS-TOTAL SMALL CAP - NET MGR			2.05	(3.27)	16.95	(10.90)	14.47	21.28	(6.52)	3.05	12.28	6.32			
RUSSELL 2000 (DAILY)			2.10	(3.31)	16.98	(11.01)	14.65	21.31	(4.41)	4.89	12.30	7.06	13.45	8.05	
EXCESS RETURN			(0.05)	0.04	(0.04)	0.12	(0.18)	(0.03)	(2.11)	(1.85)	(0.02)	(0.74)	(0.67)	(1.15)	
46 BERS-TOTAL MID CAP - GROSS	172	2.67	5.09	9.09	26.52	(7.09)	25.33	12.90	2.56	10.77	17.28	11.48		14.63	10/01/2010
ESTIMATED INVESTMENT FEES			(0.70)	(0.97)	(0.94)	(0.28)	(0.27)	(0.62)	(0.55)	(0.41)	(0.60)	(0.56)			
BERS-TOTAL MID CAP - NET MGR			4.39	8.11	25.58	(7.37)	25.06	12.28	2.01	10.36	16.68	10.92			
RUSSELL MIDCAP (DAILY)			4.13	7.83	21.35	(9.06)	18.52	13.80	(2.44)	13.22	12.16	8.63		12.91	
EXCESS RETURN			0.26	0.29	4.23	1.69	6.54	(1.51)	4.45	(2.86)	4.53	2.29		1.72	
56 BERS-TOTAL RUSSELL 1000 - GROSS	1,307	20.27	4.24	10.17	18.80									11.33	04/01/2018
ESTIMATED INVESTMENT FEES			(0.00)	(0.00)	(0.00)									(0.00)	
BERS-TOTAL RUSSELL 1000 - NET MGR			4.24	10.17	18.80									11.33	
RUSSELL 1000 (DAILY)			4.25	10.02	18.84									11.01	
EXCESS RETURN			(0.01)	0.15	(0.04)									0.32	
66 BERS-TOTAL RUSSELL TOP 200 PASSIVE - GROSS	435	6.74	4.28	10.91	17.86									12.36	05/01/2018
ESTIMATED INVESTMENT FEES			(0.00)	(0.01)	0.00									(0.01)	
BERS-TOTAL RUSSELL TOP 200 PASSIVE - NET MGR			4.28	10.90	17.86									12.35	
RUSSELL TOP 200 INDEX (DAILY)			4.29	10.89	17.91									12.35	
EXCESS RETURN			(0.01)	0.01	(0.05)									(0.01)	
76 BERS-TOTAL EMERGING MANAGER- GROSS	12	0.18	2.11	0.43	16.88	(7.81)								7.22	05/01/2017
ESTIMATED INVESTMENT FEES			(0.13)	(0.50)	(0.29)	(0.46)								(0.45)	
BERS-TOTAL EMERGING MANAGER - NET MGR			1.98	(0.06)	16.59	(8.27)								6.77	
RUSSELL 2000 (DAILY)			2.10	(3.31)	16.98	(11.01)								6.75	
EXCESS RETURN			(0.11)	3.24	(0.39)	2.74								0.02	

# Consolidated Performance Report

Through June 30, 2019



	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014	3 Year	5 Year	10 Year	ITD	Inception Date
<b>EQUITY RETURN DETAIL</b>															
88 BERS-TOTAL WORLD ex-USA EQUITY - GROSS	791	12.27	3.43	(0.87)	17.49	(14.67)	35.49	6.19	(4.75)	(4.81)	13.68	4.71	9.74	7.74	11/01/1992
ESTIMATED INVESTMENT FEES			(0.06)	(0.24)	(0.14)	(0.21)	(0.32)	(0.26)	(0.24)	(0.24)	(0.27)	(0.26)			
BERS-TOTAL WORLD ex-USA EQUITY - NET MGR			3.37	(1.11)	17.35	(14.88)	35.18	5.93	(4.98)	(5.04)	13.40	4.46			
NYC DEVELOPED EQUITY BENCHMARK			3.50	0.16	14.39	(14.68)	25.65	1.00	(0.81)	(4.90)	9.02	2.20	6.88	6.01	
EXCESS RETURN			(0.13)	(1.27)	2.97	(0.19)	9.53	4.93	(4.17)	(0.14)	4.38	2.26	2.87	1.72	
98 BERS-TOTAL WORLD ex-USA LARGE & MID ACTIVE - GROSS	690	10.70	3.62	(0.04)	18.25	(13.90)	35.81	6.12	(6.35)	(4.83)	14.43	4.83		5.41	11/01/2013
ESTIMATED INVESTMENT FEES			(0.06)	(0.23)	(0.13)	(0.20)	(0.31)	(0.25)	(0.22)	(0.23)	(0.26)	(0.24)		(0.25)	
BERS-TOTAL WORLD ex-USA LARGE & MID ACTIVE - NET MGR			3.56	(0.27)	18.11	(14.09)	35.51	5.87	(6.57)	(5.05)	14.16	4.59		5.16	
NYC CUSTOM WORLD EX-USA LG & MID ACT INDEX			3.79	1.29	14.64	(14.09)	25.18	1.00	(0.81)	(4.90)	9.22	2.31		3.29	
EXCESS RETURN			(0.23)	(1.56)	3.48	(0.00)	10.32	4.87	(5.76)	(0.15)	4.95	2.28		1.87	
118 BERS-TOTAL WORLD ex-USA SMALL CAP ACTIVE - GROSS	101	1.57	2.16	(5.96)	12.68	(18.96)	38.82	6.76	9.04	(4.60)	10.52	5.27		8.29	05/01/2013
ESTIMATED INVESTMENT FEES			(0.09)	(0.31)	(0.19)	(0.27)	(0.44)	(0.35)	(0.36)	(0.32)	(0.36)	(0.34)			
BERS-TOTAL WORLD ex-USA SMALL CAP ACTIVE - NET MGR			2.08	(6.27)	12.50	(19.22)	38.38	6.41	8.68	(4.92)	10.16	4.92			
S&P EPAC SMALL CAP USD NET			2.37	(6.38)	12.53	(18.58)	33.47	1.34	8.58	(3.43)	8.61	4.13		6.71	
EXCESS RETURN			(0.29)	0.10	(0.03)	(0.65)	4.91	5.07	0.09	(1.49)	1.55	0.79		1.58	
128 BERS-TOTAL ACTIVE EMERGING MARKETS - GROSS	310	4.81	1.08	(1.09)	9.36	(16.99)	40.92	13.14	(14.83)	4.14	11.45	3.38	6.47	8.20	04/01/2004
ESTIMATED INVESTMENT FEES			(0.08)	(0.33)	(0.18)	(0.28)	(0.47)	(0.40)	(0.31)	(0.37)	(0.38)	(0.36)			
BERS-TOTAL ACTIVE EMERGING MARKETS - NET MGR			1.00	(1.42)	9.18	(17.27)	40.45	12.74	(15.14)	3.77	11.07	3.03			
MSCI EMERGING MARKETS			0.61	1.21	10.58	(14.57)	37.28	11.19	(14.92)	(2.19)	10.66	2.49	5.81	7.83	
EXCESS RETURN			0.39	(2.63)	(1.40)	(2.70)	3.16	1.55	(0.22)	5.96	0.41	0.54	0.66	0.37	
138 BERS-TOTAL PASSIVE EMERGING MARKETS - GROSS	139	2.16	0.70	1.44	10.83	(14.45)	37.41							10.79	12/01/2016
ESTIMATED INVESTMENT FEES			(0.00)	(0.02)	(0.01)	0.01	(0.15)							(0.05)	
BERS-TOTAL PASSIVE EMERGING MARKETS - NET MGR			0.70	1.42	10.81	(14.45)	37.26							10.75	
MSCI EMERGING MARKETS			0.61	1.21	10.58	(14.57)	37.28							10.69	
EXCESS RETURN			0.09	0.21	0.23	0.12	(0.02)							0.05	
148 BERS-TOTAL INTERNATIONAL FUND OF FUNDS - GROSS	62	0.95	4.12	0.69	14.63	(14.23)								5.94	05/01/2017
ESTIMATED INVESTMENT FEES			(0.09)	(0.34)	(0.19)	(0.30)								(0.37)	
BERS-TOTAL INTERNATIONAL FUND OF FUNDS - NET MGR			4.03	0.34	14.44	(14.53)								5.57	
MSCI ACWI EX USA IMI NET			2.74	0.26	13.33	(14.76)								5.29	
EXCESS RETURN			1.29	0.08	1.11	0.23								0.28	
158 BERS-TOTAL GLOBAL EQUITY - GROSS	109	1.70	6.65	9.85	25.33									8.21	06/01/2018
ESTIMATED INVESTMENT FEES			(0.15)	(0.61)	(0.38)									(0.60)	
BERS-TOTAL GLOBAL EQUITY - NET MGR			6.50	9.24	24.95									7.61	
MSCI AC WORLD (DAILY CONST)			3.61	5.74	16.23									4.77	
EXCESS RETURN			2.89	3.50	8.73									2.84	

# Consolidated Performance Report

Through June 30, 2019



	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014	3 Year	5 Year	10 Year	ITD	Inception Date
<b>EQUITY RETURN DETAIL</b>															
170 BERS-TOTAL PRIVATE EQUITY (TIME WEIGHTED)	422	6.55	4.73	16.26	5.02	20.44	19.22	10.42	14.26	22.16	17.06	15.59	15.34	7.75	07/01/2006
NYC R3000 +3% LAGGED			14.85	12.01	(0.80)	21.06	22.22	18.37	2.49	21.24	16.86	13.64	19.77	12.58	
EXCESS RETURN			(10.12)	4.25	5.82	(0.62)	(3.00)	(7.96)	11.77	0.92	0.21	1.95	(4.43)	(4.83)	
180 BERS-TOTAL PRIVATE REAL ESTATE (TIME WEIGHTED)	356	5.52	2.04	9.92	4.50	11.95	13.57	10.75	16.06	13.67	11.59	12.56		11.97	12/01/2010
NCREIF NFI-ODCE NET + 100 BP			1.02	6.51	2.48	8.43	7.72	8.86	15.08	12.56	7.67	9.84		11.76	
EXCESS RETURN			1.02	3.41	2.02	3.52	5.85	1.89	0.98	1.10	3.93	2.72		0.21	
190 BERS-TOTAL INFRASTRUCTURE (TIME WEIGHTED)	117	1.82	2.96	12.55	5.04	14.77	24.82	9.26	11.63	18.85	16.33	13.94		15.00	12/01/2013
CPI + 4%			1.45	5.86	3.02	6.03	6.20	6.17	4.69	4.69	6.16	5.55		5.63	
EXCESS RETURN			1.52	6.69	2.02	8.73	18.62	3.09	6.94	14.17	10.18	8.39		9.36	

# Consolidated Performance Report

Through June 30, 2019



	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014	3 Year	5 Year	10 Year	ITD	Inception Date
<b>FIXED INCOME RETURN DETAIL</b>															
202 BERS-TOTAL FIXED INCOME - GROSS	2,018	31.31	3.07	7.36	6.78	(0.40)	4.47	6.65	(0.68)	5.69	3.69	3.39	5.64	5.17	04/01/2004
ESTIMATED INVESTMENT FEES			(0.02)	(0.10)	(0.05)	(0.10)	(0.13)	(0.13)	(0.13)	(0.16)	(0.11)	(0.12)			
EST MANAGEMENT FEES			(0.02)	(0.10)	(0.05)	(0.10)	(0.13)	(0.13)	(0.13)	(0.16)	(0.11)	(0.12)			
EST INCENTIVE FEES															
EST OTHER FEES															
EST FEE OFFSETS															
BERS-TOTAL FIXED INCOME - NET MGR			3.05	7.26	6.73	(0.50)	4.34	6.51	(0.81)	5.53	3.57	3.27			
210 BERS-TOTAL STRUCTURED FIXED INCOME - GROSS	1,264	19.61	3.46	8.23	6.57	(0.36)	4.19	3.95	0.26	7.66	2.70	3.35	4.92	7.48	01/01/1985
ESTIMATED INVESTMENT FEES			(0.01)	(0.04)	(0.02)	(0.04)	(0.05)	(0.06)	(0.06)	(0.08)	(0.05)	(0.05)			
BERS-TOTAL STRUCTURED FIXED INCOME - NET MGR			3.45	8.19	6.55	(0.40)	4.14	3.89	0.20	7.58	2.65	3.29			
NYC CUSTOM STRUCTURED INDEX-BERS			3.92	9.47	7.46	(0.21)	4.48								
EXCESS RETURN			(0.46)	(1.28)	(0.91)	(0.19)	(0.34)								
220 BERS-TOTAL TIPS - GROSS	302	4.69	2.86	4.84	6.19	(1.28)	3.05	4.78	(0.83)	3.37	2.08	1.86	3.78	3.87	06/01/2005
ESTIMATED INVESTMENT FEES			(0.00)	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)	(0.02)	(0.10)	(0.01)	(0.02)			
BERS-TOTAL TIPS - NET MGR			2.85	4.83	6.18	(1.29)	3.04	4.78	(0.85)	3.27	2.08	1.84			
BBG BARC GBL INF-LK: US TIPS (DLY)			2.86	4.84	6.15	(1.26)	3.01	4.68	(1.44)	3.64	2.08	1.76	3.64	3.71	
EXCESS RETURN			(0.01)	(0.00)	0.03	(0.03)	0.04	0.09	0.58	(0.37)	(0.00)	0.08	0.15	0.15	
230 BERS-TOTAL HIGH YIELD - GROSS	291	4.51	2.36	7.41	9.53	(1.64)	7.17	15.96	(4.34)	3.09	7.37	4.46	9.12	6.01	08/01/1997
ESTIMATED INVESTMENT FEES			(0.08)	(0.34)	(0.18)	(0.30)	(0.36)	(0.36)	(0.32)	(0.34)	(0.34)	(0.34)			
BERS-TOTAL HIGH YIELD - NET MGR			2.28	7.07	9.35	(1.94)	6.81	15.60	(4.66)	2.75	7.03	4.12			
HIGH YIELD CUSTOM BENCHMARK			2.50	7.48	9.94	(2.34)	7.03	15.48	(4.21)	2.78	7.06	4.41	8.24	6.02	
EXCESS RETURN			(0.22)	(0.40)	(0.59)	0.40	(0.22)	0.12	(0.45)	(0.04)	(0.02)	(0.29)	0.88	(0.01)	
240 BERS- TOTAL BANK LOANS - GROSS	123	1.91	1.03	3.32	4.93	0.71	4.81	8.86	0.46	2.34	5.22	3.87		4.41	12/01/2012
ESTIMATED INVESTMENT FEES			(0.08)	(0.34)	(0.17)	(0.33)	(0.34)	(0.38)	(0.34)	(0.35)	(0.35)	(0.35)			
BERS-TOTAL BANK LOANS - NET MGR			0.95	2.98	4.75	0.38	4.47	8.48	0.12	1.99	4.87	3.52			
CSFB LEVERAGED LOAN INDEX			1.58	4.15	5.42	1.14	4.25	9.88	(0.38)	2.06	5.43	3.85		4.40	
EXCESS RETURN			(0.63)	(1.17)	(0.66)	(0.76)	0.22	(1.39)	0.51	(0.07)	(0.55)	(0.33)		0.00	
250 BERS-TOTAL TARGETED INVESTMENTS (NO CASH) - GROSS	38	0.59	3.75	9.46	6.70	1.08	4.37	2.60	3.60	7.31	3.02	4.16	4.44	6.78	12/01/1984
ESTIMATED INVESTMENT FEES			(0.05)	(0.25)	(0.11)	(0.25)	(0.26)	(0.29)	(0.30)	(0.35)	(0.25)	(0.28)	(0.32)	(0.12)	
BERS-TOTAL TARGETED INVESTMENTS (NO CASH)- NET MGR			3.70	9.21	6.59	0.83	4.11	2.31	3.30	6.96	2.77	3.89	4.12	6.65	
BERS CUSTOM BENCHMARK (NO CASH)			2.60	7.20	5.16	0.85	3.19	2.43	1.18	5.76	2.40	2.94	3.67		
EXCESS RETURN			1.10	2.01	1.43	(0.02)	0.92	(0.12)	2.12	1.20	0.37	0.94	0.44		
<b>CASH SUMMARY</b>															
262 Short Term BERS - GROSS	51	0.80	0.38	2.10	1.00	1.92	1.10	0.55	0.39	0.28	1.41	1.03	0.78	2.00	10/01/2000
ESTIMATED INVESTMENT FEES			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Short Term BERS - NET MGR			0.38	2.10	1.00	1.92	1.10	0.55	0.39	0.28	1.41	1.03	0.78		
266 Cash Account	0	0.00													
268 Securities Lending	0	0.00													
270 KKR Cash Account	0	0.00													

New York City  
Board of Education Retirement System

# Appendix B

## Public Markets Manager Performance Detail

# Public Markets Manager Performance Detail



Net Returns Through June 30, 2019

	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014
EQUITY SUMMARY										
US EQUITY										
BlackRock US SCG R2000	76	1.17	2.74	(0.36)	20.34	(9.14)	22.26	11.29	(1.30)	5.50
RUSSELL 2000 GROWTH DAILY			2.75	(0.49)	20.36	(9.31)	22.17	11.32	(1.38)	5.60
Excess			(0.01)	0.13	(0.02)	0.17	0.09	(0.02)	0.08	(0.11)
BlackRock US SCV R2000	70	1.08	1.31	(6.25)	13.46	(12.79)	7.34	31.71	(7.38)	4.11
RUSSELL 2000 VALUE DAILY			1.38	(6.24)	13.47	(12.86)	7.84	31.74	(7.47)	4.22
Excess			(0.06)	(0.02)	(0.00)	0.08	(0.49)	(0.03)	0.09	(0.11)
Wellington US MCC	172	2.67	4.39	8.11	25.58	(7.37)	25.06	12.28	1.76	10.96
S&P MID CAP 400			3.05	1.36	17.97	(11.08)	16.24	20.74	(2.18)	9.77
Excess			1.35	6.75	7.60	3.71	8.82	(8.45)	3.94	1.19
BlackRock US LC R1000 Value	0	0.00					13.66	17.31	(3.81)	13.39
RUSSELL 1000 VALUE (DAILY)							13.66	17.34	(3.83)	13.45
Excess							(0.01)	(0.03)	0.01	(0.06)
BlackRock US LMC R1000 Core	1,307	20.27	4.24	10.18	18.80					
RUSSELL 1000 (DAILY)			4.25	10.02	18.84					
Excess			(0.01)	0.16	(0.04)					
SSGA US LMC Top 200 Core	435	6.74	4.28	10.90	17.86					
RUSSELL TOP 200 INDEX (DAILY)			4.29	10.89	17.91					
Excess			(0.01)	0.01	(0.05)					
FUND OF FUNDS										
BERS-TOTAL FUNDS OF FUNDS	12	0.18	1.98	(0.06)	16.59	(8.27)				
RUSSELL 2000 (DAILY)			2.10	(3.31)	16.98	(11.01)				
Excess			(0.11)	3.24	(0.39)	2.74				

# Public Markets Manager Performance Detail



Net Returns Through June 30, 2019

	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014
BERS-TOTAL LEGATO	12	0.18	1.98	(0.06)	16.59	(8.27)				
RUSSELL 2000 (DAILY)			2.10	(3.31)	16.98	(11.01)				
Excess			(0.11)	3.24	(0.39)	2.74				
NON - US EQUITY										
Sprucegrove WorldxUS LMCC	340	5.27	3.43	1.42	13.15	(13.67)	27.15	11.14	(9.56)	(3.19)
NYC Developed Value Benchmark			3.79	1.29	14.64	(14.09)	22.77	5.02	(5.68)	(5.39)
Excess			(0.36)	0.13	(1.48)	0.42	4.38	6.12	(3.87)	2.21
Baillie Gifford WorldxUS LMCC	350	5.43	3.68	(2.62)	23.42	(15.35)	44.17	0.70	(3.81)	(6.66)
NYC Developed Growth Benchmark			3.79	1.29	14.64	(14.09)	27.77	(3.04)	4.09	(4.43)
Excess			(0.11)	(3.90)	8.79	(1.26)	16.40	3.74	(7.90)	(2.23)
Acadian WorldxUS SCC	75	1.16	2.05	(6.23)	12.55	(19.22)	38.38	6.41	8.68	(4.92)
S&P EPAC Small Cap USD NET			2.37	(6.38)	12.53	(18.58)	33.47	1.34	8.58	(3.43)
Excess			(0.32)	0.14	0.02	(0.65)	4.91	5.07	0.09	(1.49)
Alger EAFE SCC	27	0.41	2.16							
MSCI EAFE SMALL CAP NET (DAILY)			1.71							
Excess			0.45							
EMERGING MARKETS										
Acadian EM	310	4.81	1.00	(1.42)	9.18	(17.27)	40.45	12.74	(15.14)	3.77
MSCI EMERGING MARKETS			0.61	1.21	10.58	(14.57)	37.28	11.19	(14.92)	(2.19)
Excess			0.39	(2.63)	(1.40)	(2.70)	3.16	1.55	(0.22)	5.96
BlackRock MSCI EM Core	139	2.16	0.70	1.42	10.81	(14.45)	37.25			
MSCI EMERGING MARKETS			0.61	1.21	10.58	(14.57)	37.28			
Excess			0.09	0.21	0.23	0.12	(0.03)			

# Public Markets Manager Performance Detail



Net Returns Through June 30, 2019

	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014
INTERNATIONAL FOF										
BERS-TOTAL INTERNATIONAL FOF	62	0.95	4.03	0.34	14.44	(14.53)				
MSCI ACWI ex USA IMI Net			2.74	0.26	13.33	(14.76)				
Excess			1.29	0.08	1.11	0.23				
BERS-TOTAL INTERNATIONAL FIS										
BERS-TOTAL INTERNATIONAL FIS	62	0.95	4.03	0.34	14.44	(14.53)				
MSCI ACWI ex USA IMI Net			2.74	0.26	13.33	(14.76)				
Excess			1.29	0.08	1.11	0.23				
GLOBAL EQUITY										
Morgan Stanley-Global	53	0.82	6.88	6.70	27.57					
MSCI AC WORLD (Daily Const)			3.61	5.74	16.23					
Excess			3.27	0.96	11.34					
Fiera-Global	56	0.87	6.15		22.58					
MSCI World Index			4.00		16.98					
Excess			2.15		5.60					
FIXED INCOME SUMMARY										
STRUCTURED FIXED INCOME										
BlackRock Mortgages	204	3.16	2.26	6.63	4.63	1.00	3.06	2.32	1.73	
FTSE MORTGAGE INDEX			2.09	6.39	4.30	1.01	2.47	1.59	1.56	
Excess			0.17	0.24	0.33	(0.01)	0.59	0.73	0.17	
Prudential Credit	125	1.94	4.17	10.14	9.11	(1.95)	6.21	5.86	(0.22)	7.20
NYC - Investment Grade Credit			4.07	10.13	8.99	(1.90)	6.04	5.56	(0.65)	7.04
Excess			0.09	0.02	0.12	(0.05)	0.17	0.30	0.43	0.16
Taplin Credit	108	1.67	4.48	10.13	10.43	(3.42)	7.18	8.02	(3.01)	8.68
NYC - Investment Grade Credit			4.07	10.13	8.99	(1.90)	6.04	5.56	(0.65)	7.04
Excess			0.40	0.00	1.44	(1.52)	1.14	2.46	(2.36)	1.64



# Public Markets Manager Performance Detail



Net Returns Through June 30, 2019

	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014
SSGA LI Treasury	574	8.90	4.53	10.29	8.06	(0.18)	4.92	1.23	0.45	12.21
NYC - Treasury Agency Plus Five			4.56	10.38	8.09	(0.05)	4.66	1.21	0.72	12.38
Excess			(0.03)	(0.09)	(0.03)	(0.12)	0.27	0.01	(0.27)	(0.16)
SSGA IT Treasury 1-10Y	5	0.08	2.33							
FTSE USBIG Treasury/Agency 1-10 y			2.33							
Excess			(0.00)							
SSGA ST Treasury 1-3Y	249	3.86	1.44	3.95	2.44	1.51	0.45			
FTSE USBIG Treasury 1-3 Y Index			1.44	3.95	2.44	1.56	0.42			
Excess			0.00	(0.00)	(0.01)	(0.05)	0.03			
HIGH YIELD										
Mackay Shields High Yield	146	2.27	2.43		9.33					
BBG BARC US HY - 2% Issr Cap			2.50		9.94					
Excess			(0.08)		(0.61)					
Nomura High Yield	145	2.24	2.19		9.53					
BBG BARC US HY - 2% Issr Cap			2.50		9.94					
Excess			(0.31)		(0.41)					
Shenkman High Yield	0	0.00					6.60	11.62	(1.97)	2.66
High Yield Custom Benchmark							7.03	15.48	(4.21)	2.78
Excess							(0.43)	(3.85)	2.24	(0.13)
BANK LOANS										
Barings Bank Loans	123	1.91	0.95	2.98	4.75	0.38	4.47	8.48	0.12	1.99
CSFB LEVERAGED LOAN INDEX			1.58	4.15	5.42	1.14	4.25	9.88	(0.38)	2.06
Excess			(0.63)	(1.17)	(0.66)	(0.76)	0.22	(1.39)	0.51	(0.07)

# Public Markets Manager Performance Detail



Net Returns Through June 30, 2019

	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014
TIPS										
SSGA TIPS	302	4.69	2.85	4.83	6.18	(1.29)	3.04	4.78		
BBG BARC Gbl Inf-Lk: US TIPS (Dly)			2.86	4.84	6.15	(1.26)	3.01	4.68		
Excess			(0.01)	(0.00)	0.03	(0.03)	0.04	0.09		
ECONOMICALLY TARGETED INVESTMENTS										
RBC Access MBS	10	0.15	2.30	6.83	4.85	0.49	2.64	1.61	1.83	6.66
Access RBC Benchmark			2.16	6.27	4.21	1.17	1.96	1.52	1.40	5.08
Excess			0.14	0.55	0.64	(0.69)	0.69	0.09	0.43	1.58
AFL-CIO Housing Investment Trust	17	0.27	3.28	7.90	6.02	0.16	3.17	1.94	1.13	6.10
BBG BARC Agg (Dly)			3.08	7.87	6.11	0.01	3.54	2.65	0.55	5.97
Excess			0.20	0.03	(0.09)	0.15	(0.38)	(0.71)	0.58	0.14
CPC Construction Facility	1	0.01	0.79	4.22	2.12	4.14	6.05	(3.95)	12.90	
CPC CONST BENCHMARK			1.06	4.23	2.13	3.99	3.34	3.03	2.90	
Excess			(0.27)	(0.01)	(0.01)	0.15	2.72	(6.99)	10.01	
BOA PPAR FNMA	1	0.02	5.66	13.51	9.25	2.33	5.21	4.07	42.03	13.31
FNMA Plus 85bps			2.35	7.26	4.73	1.86	3.61	2.38	2.50	7.13
Excess			3.31	6.25	4.52	0.47	1.60	1.69	39.53	6.19
Citibank PPAR FNMA	2	0.03	6.30	15.16	9.75	2.63	5.26	3.71	6.69	25.71
FNMA Plus 85bps			2.35	7.26	4.73	1.86	3.61	2.38	2.50	7.13
Excess			3.96	7.90	5.02	0.77	1.65	1.33	4.20	18.58
Citibank PPAR GNMA	0	0.00	2.53	10.12	5.32	1.90	3.10	2.78	5.08	15.37
GNMA Plus 65bps			2.13	6.90	4.50	1.63	2.53	2.28	2.02	6.65
Excess			0.40	3.21	0.82	0.27	0.57	0.50	3.06	8.72
CFSB PPAR GNMA	0	0.00	2.85	9.78	5.57	0.99	3.83	3.21	5.90	15.34
GNMA Plus 65bps			2.13	6.90	4.50	1.63	2.53	2.28	2.02	6.65
Excess			0.73	2.87	1.07	(0.65)	1.30	0.93	3.88	8.69

# Public Markets Manager Performance Detail

Net Returns Through June 30, 2019



	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014
CPC PPAR FNMA	1	0.02	5.94	14.84	9.95	2.31	5.06	6.15	8.96	13.91
FNMA Plus 85bps			2.35	7.26	4.73	1.86	3.61	2.38	2.50	7.13
Excess			3.59	7.58	5.22	0.45	1.45	3.77	6.46	6.78
JPMC PPAR FNMA	3	0.05	6.79	14.75	10.26	1.68	9.96	7.94	6.18	12.06
FNMA Plus 85bps			2.35	7.26	4.73	1.86	3.61	2.38	2.50	7.13
Excess			4.44	7.50	5.52	(0.18)	6.35	5.56	3.68	4.93
LIIF PPAR FNMA	2	0.03	5.72	14.40	9.26	2.27	9.55	5.03	6.29	38.12
FNMA Plus 85bps			2.35	7.26	4.73	1.86	3.61	2.38	2.50	7.13
Excess			3.38	7.15	4.53	0.41	5.94	2.65	3.79	30.99
LIIF PPAR GNMA	0	0.00	2.40	8.01	4.37	2.53	2.52	3.88	3.92	9.74
GNMA Plus 65bps			2.13	6.90	4.50	1.63	2.53	2.28	2.02	6.65
Excess			0.27	1.11	(0.13)	0.89	(0.01)	1.61	1.91	3.09
LISC PPAR FNMA	0	0.00	5.85		9.79					
FNMA Plus 85bps			2.35		4.73					
Excess			3.50		5.05					
NCBCI PPAR FNMA	0	0.00	0.57	8.27	3.10	2.00	1.75	3.46	4.97	14.93
FNMA Plus 85bps			2.35	7.26	4.73	1.86	3.61	2.38	2.50	7.13
Excess			(1.78)	1.02	(1.63)	0.15	(1.86)	1.07	2.47	7.81
NCBCI PPAR GNMA	0	0.00	1.40	8.09	3.91	1.23	3.01	3.51	5.53	16.66
GNMA Plus 65bps			2.13	6.90	4.50	1.63	2.53	2.28	2.02	6.65
Excess			(0.73)	1.19	(0.59)	(0.41)	0.48	1.23	3.52	10.01
Wells Fargo PPAR FNMA	0	0.00	5.80	23.19	16.37					
FNMA Plus 85bps			2.35	7.26	4.73					
Excess			3.45	15.93	11.64					

## Public Markets Manager Performance Detail

Net Returns Through June 30, 2019



	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014
<b>CASH</b>										
Short Term BERS	51	0.80	0.38	2.10	1.00	1.92	1.10	0.55	0.39	0.28
91 DAY TREASURY BILL (DAILY)			0.64	2.31	1.24	1.87	0.86	0.33	0.05	0.03
Excess			(0.26)	(0.21)	(0.24)	0.05	0.24	0.23	0.34	0.24
Cash Account	0	0.00								
Securities Lending	0	0.00								
KKR Cash Account	0	0.00								

New York City  
Board of Education Retirement System

# Appendix C

## Alternative Assets Manager Performance Detail

# Alternative Assets Manager Performance Detail

Through March 31, 2019



	Vintage Year (Cash Flow)	Commitments	Contributions	Distributions	Market Value	Investment Multiple	ITD IRR%
<b>TOTAL PRIVATE EQUITY</b>		833,886,789	488,752,166	291,453,665	413,981,154	1.44	11.8%
<b>TOTAL ACTIVE</b>							
Mesirow Financial Private Equity Partnership Fund III, L.P.	2005	57,000,000	55,100,648	80,686,991	12,206,857	1.69	8.4%
Mesirow Financial Private Equity Partnership Fund IV, L.P.	2006	25,000,000	22,973,154	28,622,289	11,642,509	1.75	10.4%
New York Fairview Private Equity Fund, L.P.	2006	19,000,000	17,320,307	18,597,037	4,995,912	1.36	5.6%
Mesirow Financial Private Equity Partnership Fund V, L.P.	2009	45,000,000	38,947,655	36,457,954	37,988,230	1.91	16.2%
Platinum Equity Capital Partners III, L.P.	2012	15,000,000	14,094,835	19,176,093	5,477,029	1.75	36.1%
Warburg Pincus Private Equity XI, L.P.	2012	25,000,000	25,421,162	17,016,506	24,051,304	1.62	14.1%
Apollo Investment Fund VIII, L.P.	2013	20,000,000	18,062,936	5,746,531	17,160,899	1.27	10.6%
Carlyle Partners VI, L.P.	2013	20,000,000	20,807,096	8,482,982	18,710,948	1.31	11.4%
Landmark Equity Partners XV, L.P.	2013	19,000,000	13,106,023	9,585,348	6,836,567	1.25	12.0%
Landmark Equity Partners XV, L.P. - Side Car	2013	6,000,000	4,884,692	3,204,054	3,619,204	1.40	15.0%
CVC Capital Partners VI, L.P.	2014	20,537,124	17,182,164	4,563,459	17,826,523	1.30	13.1%
Crestview Partners III, L.P.	2013	15,000,000	9,813,137	1,788,885	11,380,903	1.34	16.0%
Crestview Partners III (Co-Investment B), L.P.	2013	5,000,000	4,582,635	250,760	5,404,120	1.23	10.5%
ASF VI, L.P.	2014	15,000,000	10,631,331	5,920,776	9,316,267	1.43	13.5%
ASF VI NYC Co-Invest, L.P.	2014	5,000,000	3,862,814	3,009,524	2,341,757	1.39	12.6%
Carlyle Partners VI, L.P. - Side Car	2014	2,200,000	1,600,199	92,959	1,544,766	1.02	0.8%
Lexington Capital Partners VIII, L.P.	2014	20,000,000	16,944,693	6,312,838	15,473,693	1.29	20.4%
Vista Equity Partners Fund V, L.P.	2014	25,000,000	28,903,778	22,614,664	28,808,340	1.78	22.6%
Centerbridge Capital Partners III, L.P.	2015	2,500,000	1,405,477	467,111	1,403,878	1.33	13.7%
Siris Partners III, L.P.	2015	3,500,000	2,939,689	1,599,722	1,880,040	1.18	10.0%
<u>NYCBERS - 2012 Emerging Manager Program</u>	<u>2012</u>	<u>14,650,000</u>	<u>13,995,672</u>	<u>2,125,178</u>	<u>15,911,360</u>	<u>1.29</u>	<u>9.4%</u>
American Securities Partners VII, L.P.	2015	8,000,000	6,393,888	1,013,767	4,849,689	0.92	-6.4%
ASF VII, L.P.	2015	10,000,000	3,441,285	551,155	3,854,210	1.28	16.8%
ASF VII B NYC Co-Invest, L.P.	2015	6,000,000	3,049,764	319,787	4,469,355	1.57	41.1%
<u>NYCBERS - 2015 Emerging Manager Program</u>	<u>2015</u>	<u>37,250,000</u>	<u>10,490,467</u>	<u>373,785</u>	<u>11,659,073</u>	<u>1.15</u>	<u>16.0%</u>
Warburg Pincus Private Equity XII, L.P.	2015	21,500,000	15,650,340	1,019,437	17,552,085	1.19	11.6%
Welsh, Carson, Anderson & Stowe XII, L.P.	2015	10,000,000	7,060,944	1,392,304	9,827,307	1.59	26.4%
Bridgepoint Europe V, L.P.	2015	8,573,266	7,780,008	1,061,965	8,749,898	1.26	15.4%
Bridgepoint Europe V Co-Invest	2015	2,910,487	2,702,670	270,187	4,107,249	1.62	34.9%
EQT VII, L.P.	2015	17,012,857	14,066,812	1,344,195	16,381,736	1.26	14.0%

Information provided by the New York City Board of Education Retirement System Consultants

## Alternative Assets Manager Performance Detail

Through March 31, 2019



	Vintage Year (Cash Flow)	Commitments	Contributions	Distributions	Market Value	Investment Multiple	ITD IRR%
Vista Equity Partners Fund VI, L.P.	2016	16,000,000	17,280,452	4,164,227	18,541,530	1.31	19.5%
Apax IX USD, L.P.	2016	13,000,000	5,886,158	123,294	8,014,247	1.38	N/M
Ares Corporate Opportunities Fund V, L.P.	2017	10,000,000	5,619,553	172,155	5,676,484	1.04	N/M
Green Equity Investors VII, L.P.	2017	10,000,000	5,088,365	39,598	5,624,389	1.11	N/M
BC European Capital X, L.P.	2017	11,391,649	5,676,912	-	5,599,685	0.99	N/M
BC European Capital X Metro Co-Investment L.P.	2017	4,604,299	3,011,417	-	3,100,121	1.03	N/M
Platinum Equity Capital Partners IV, L.P.	2016	11,500,000	7,800,671	2,312,758	8,388,823	1.37	N/M
CVC Capital Partners VII, L.P.	2018	19,117,446	3,048,070	28,740	3,729,743	1.23	N/M
Apollo Investment Fund IX, L.P.	2018	32,000,000	2,923,000	331	2,514,519	0.86	N/M
KKR Americas Fund XII, L.P.	2017	16,000,000	6,286,470	105,478	6,550,955	1.06	N/M
Warburg Pincus Financial Sector, L.P.	2017	13,000,000	3,419,000	679,855	2,384,020	0.90	N/M
EQT VIII SCSP	2018	12,918,795	1,869,612	158,561	1,674,704	0.98	N/M
Siris Partners IV, L.P.	2018	10,000,000	1,515,726	-	1,409,820	0.93	N/M
Bridgepoint Europe VI, L.P.	2018	14,023,200	-	-	(172,414)	N/A	N/A
Bridgepoint Europe VI Co-Invest	2018	3,505,800	-	-	-	N/A	N/M
EQT VIII SCSP (Co-Invest)	2018	4,700,200	712,512	-	796,468	1.12	N/M
Platinum Equity Small Cap Fund, L.P.	2018	10,000,000	760,743	-	598,099	0.79	N/M
Platinum Equity Capital Partners IV, L.P. (Co-Invest)	2018	1,500,000	1,050,000	-	979,938	0.93	N/M
Crestview Partners IV (FF), L.P.	2018	2,666,667	-	-	-	N/A	N/A
Crestview Partners IV, L.P.	2018	8,000,000	-	-	-	N/A	N/A
WCAS XIII, L.P.	2019	10,000,000	73,353	-	19,777	0.27	N/M
Palladium Equity Partners V, L.P.	2017	10,000,000	1,645,967	-	1,255,511	0.76	N/M
KKR European Fund V, L.P. - USD	2019	9,950,000	-	-	-	N/A	N/A
Lexington Capital Partners IX, L.P.	2019	12,375,000	-	-	-	N/A	N/A
ASF VIII, L.P.	2019	21,000,000	2,100	-	73,061	34.79	N/M
ASF VIII B NYC Co-Invest, L.P.	2019	10,500,000	1,050	-	263	0.25	N/M
Warburg Pincus Global Growth, L.P.	2019	15,000,000	177,575	-	131,717	0.74	N/M
Vista Equity Partners Fund VII, L.P.	2018	20,500,000	1,687,187	425	1,657,984	0.98	N/M

Information provided by the New York City Board of Education Retirement System Consultants

# Alternative Assets Manager Performance Detail

Through March 31, 2019



	Vintage Year	Style Sector	Original Commitment	Total Contributions	Total Distributions	Market Value	Total Value Multiple	Net IRR%
<b>TOTAL PRIVATE REAL ESTATE</b>			520,279,218	402,508,511	216,017,320	345,659,927	1.40	11.5%
<b>TOTAL PRIVATE REAL ESTATE</b>								
LaSalle Property Fund	2010	Core Portfolio	38,600,000	27,600,000	9,703,043	39,301,845	1.78	10.4%
UBS Trumbull Property Fund	2011	Core Portfolio	41,400,000	63,368,872	55,565,544	47,068,349	1.62	8.6%
NYC Asset Investor #2	2013	Core Portfolio	11,000,000	10,728,942	3,214,303	14,315,709	1.63	14.3%
MetLife Core Property Fund	2014	Core Portfolio	15,000,000	15,000,000	2,863,707	18,911,202	1.45	9.7%
USAA Eagle Real Estate Fund	2015	Core Portfolio	18,000,000	14,762,864	961,703	16,411,555	1.18	8.6%
Artemis Co-Investment1	2016	Core Portfolio	11,000,000	10,728,426	3,941,790	9,027,653	1.21	19.0%
Brookfield Premier Real Estate Partners	2016	Core Portfolio	10,000,000	10,811,759	811,759	12,675,900	1.25	11.6%
Exeter Core Industrial Club Fund II	2016	Core Portfolio	10,000,000	7,035,000	843,276	7,674,916	1.21	13.3%
Jamestown Premier Property Fund	2016	Core Portfolio	6,246,307	5,928,728	2,579,885	4,534,070	1.20	9.0%
Lion Industrial Trust	2017	Core Portfolio	18,000,000	18,976,702	976,701	22,166,369	1.22	15.9%
Almanac Realty Securities VIII	2018	Core Portfolio	10,500,000	147,482	-	82,420	0.56	NM
Almanac Realty Securities VIII (Sidecar II)	2018	Core Portfolio	7,000,000	114,364	-	117,488	1.03	NM
Artemis Income and Growth Fund	2018	Core Portfolio	10,000,000	-	-	-	-	NM
Heitman Core Real Estate Debt Income Trust	2018	Core Portfolio	10,000,000	10,065,615	65,615	10,197,348	1.02	NM
Franklin Templeton Private Real Estate Fund	2011	Non-Core Portfolio	30,000,000	35,801,962	44,464,590	5,930,813	1.41	20.8%
Brookfield Strategic Real Estate Partners	2012	Non-Core Portfolio	10,000,000	11,746,644	15,352,802	7,573,663	1.95	21.4%
Blackstone Real Estate Partners Europe IV L.P. - USD	2013	Non-Core Portfolio	32,500,000	32,099,760	31,165,511	17,173,246	1.51	15.7%
NYC Asset Investor #1	2013	Non-Core Portfolio	10,000,000	11,228,742	4,672,652	9,495,563	1.26	6.7%
NYC Asset Investor #3	2013	Non-Core Portfolio	8,000,000	5,046,443	881,994	5,514,241	1.27	8.6%
Carlyle Realty Partners VII, L.P.	2014	Non-Core Portfolio	25,000,000	20,905,935	12,850,165	15,722,534	1.37	14.8%
H/2 Special Opportunities Fund III	2014	Non-Core Portfolio	15,000,000	15,000,000	11,227,079	8,236,420	1.30	11.9%
Blackstone Real Estate Partners VIII L.P.	2015	Non-Core Portfolio	16,500,000	14,322,370	4,796,886	13,552,785	1.28	15.8%
Tristan European Property Investors Special Opp IV	2015	Non-Core Portfolio	11,294,657	7,928,004	491,719	8,597,187	1.15	9.5%
DivcoWest Fund V	2016	Non-Core Portfolio	10,000,000	4,836,791	7,180	5,112,002	1.06	4.4%
Exeter Industrial Value Fund IV, L.P.	2016	Non-Core Portfolio	10,000,000	5,500,000	-	6,083,203	1.11	11.9%
H/2 Special Opportunities Fund IV	2016	Non-Core Portfolio	10,000,000	1,947,960	81,350	1,985,773	1.06	4.6%
Pramerica Real Estate Capital VI	2016	Non-Core Portfolio	10,601,972	5,229,505	2,329,213	3,870,330	1.19	17.7%
PW Real Estate Fund III	2016	Non-Core Portfolio	11,331,409	6,550,789	840,210	8,050,977	1.36	22.4%
Westbrook Real Estate Fund X Co-Investment	2016	Non-Core Portfolio	10,000,000	5,898,157	1,144,230	5,496,208	1.13	11.4%
DRA Growth and Income Fund IX	2017	Non-Core Portfolio	10,000,000	6,016,034	1,642,645	5,490,612	1.19	18.3%
Lone Star Real Estate Fund V	2017	Non-Core Portfolio	13,203,999	3,476,759	1,177,867	1,848,562	0.87	-13.7%
NYCRS-KKR CMBS Retention Partners	2017	Non-Core Portfolio	13,000,000	10,225,337	822,522	10,243,977	1.08	8.5%
Aermont Capital Real Estate Fund IV	2018	Non-Core Portfolio	10,100,874	-	-	-	-	NM
Brookfield Strategic Real Estate Partners III, L.P.	2018	Non-Core Portfolio	12,000,000	-	-	-	-	NM
KKR Real Estate Partners Americas II	2018	Non-Core Portfolio	10,000,000	3,478,564	541,379	3,197,007	1.07	NM
Blackstone Real Estate Partners IX L.P.	2019	Non-Core Portfolio	15,000,000	-	-	-	-	NM

Information provided by the New York City Retirement Systems Consultants. Interim returns are subject to change and may differ due to differences in accounting and performance methodologies.



## Alternative Assets Manager Performance Detail

Through March 31, 2019



	Vintage Year	Original Commitment	Total Contributions	Total Distributions	Market Value	Total Value Multiple	Net IRR%
<b>TOTAL INFRASTRUCTURE</b>		228,045,376	109,532,166	22,507,303	112,740,081	1.23	13.6%
<b>TOTAL INFRASTRUCTURE</b>							
Brookfield Infrastructure Fund II, L.P.	2013	10,000,000	8,207,214	2,261,561	9,921,333	1.48	12.4%
IFM Global Infrastructure Fund	2014	15,000,000	20,027,335	7,421,302	21,078,594	1.42	12.4%
Global Energy & Power Infrastructure Fund II	2014	15,000,000	12,678,770	7,717,842	10,243,777	1.42	34.8%
KKR Global Infrastructure Investors II L.P.	2014	19,000,000	18,262,054	2,148,753	19,868,060	1.21	10.7%
Global Infrastructure Partners III-A/B, L.P.	2016	12,000,000	9,113,778	593,936	9,474,971	1.10	8.0%
Brookfield Infrastructure Fund III, L.P.	2016	10,000,000	4,774,997	324,973	5,020,871	1.12	9.3%
Actis Energy 4	2016	10,600,000	5,535,314	816,395	5,768,428	1.19	18.6%
EQT Infrastructure III (No.2) SCSp	2017	9,253,777	8,482,237	385,390	9,209,842	1.13	19.2%
ASF VII Infrastructure L.P.	2017	12,000,000	4,741,240	413,278	4,611,899	1.06	27.7%
Axiom Infrastructure North America	2017	12,221,338	12,308,695	345,685	12,304,156	1.03	7.0%
NYCRS EIG Energy Partners, L.P.	2017	11,760,000	2,424,677	78,188	2,490,367	1.06	10.6%
NYCRS EIG Energy Partners Co-Investment, L.P.	2018	2,940,000	-	-	-	NM	NM
KKR Global Infrastructure Investors III L.P.	2018	15,600,000	1,080,898	-	891,311	NM	NM
Global Energy & Power Infrastructure Fund III, L.P.	2018	15,600,000	-	-	-	NM	NM
Cardinal NR Sidecar Holdings L.P.	2018	1,880,000	1,880,000	-	1,946,657	NM	NM
EQT Infrastructure IV (No.2) USD SCSp	2019	18,000,000	-	-	(103,910)	NM	NM
Ardian Infrastructure Fund V B	2019	14,590,261	14,958	-	13,724	NM	NM
Global Infrastructure Partners IV-A/B, L.P.	2019	22,600,000	-	-	-	NM	NM

Information provided by the New York City Board of Education Retirement System Consultants

**New York City  
Board of Education Retirement System**

# Appendix D

## Footnotes

Through June 30, 2019



- The Barclays Capital Aggregate (then known as the Lehman Brothers Aggregate) was used prior to 1/1/89. Effective 1/1/89, in the Government Sector, maturities of less than 5 years were dropped from the Salomon and Lehman indices. From that date until 7/1/99 the benchmark was the NYC Core + 5, from Lehman.
- Effective 7/1/94, the NYC Core + 5 Index includes BBB rated securities.
- Effective 7/1/99, the basis of the NYC Index was changed from Lehman Brothers to Salomon. Also effective 7/1/99, only Salomon indices have been used to compare all fixed income managers.
- Effective 4/1/03, the name of the benchmark provider was changed from Salomon to Citigroup.
- Effective 7/1/03, the “NYC-Loomis” benchmark index for the Loomis Sayles Enhanced Yield portfolio reflects a change from the Citigroup BB&B Index to the more appropriate BofA Merrill Lynch High Yield Master II Index.
- Effective 7/1/09, the Core+5 program was restructured.
  - The U.S. Gov’t sector benchmark Index was changed from the Citigroup Core+5 Treasury/Gov’t Sponsored Index to the Citigroup Core+5 Treasury/Agency Index.
  - The Corporate and Yankee sectors were combined to form the new Investment Grade Credit sector. The benchmark for the new combined sector is the customized Citigroup Credit Index. For historical performance purposes, the old Corporate sector Index is linked to the new Credit sector Index.
  - There were no changes to the Mortgage sector Index.
  - The total Core+5 results and benchmark returns combine the three sectors. Historical total Core+5 returns continue to include the old Corporate and Yankee sector returns.

## General Notes

- Estimated management fees for public market investments are calculated on an accrual basis without adjustment for management fee caps. Alternative investment fees are recorded on a cash basis. Since not all alternative managers currently provide detailed fee disclosure, the alternative investment fees noted here are not comprehensive.
- Public Market returns are Net of Manager Fees for periods after January 2014 and Gross of investment advisory fees for other periods unless otherwise indicated.
- Public market excess returns for periods prior to 2014 are based on Gross performance.

## Page Specific

### Page 11 - 16 - Portfolio Asset Allocation

- Rebalancing Ranges: the minimum and maximum weights that actual Asset Allocation may reach before rebalancing between Asset Classes is necessary.

### Pages 17 - 19 - Performance Attribution: Total Plan

- Plan Return at Policy Weights: the return of the Total Plan assuming actual Asset Class results were maintained at target (Adjusted Policy) weights. *Figure = (Return of Asset Class 1 \* Target Weight) plus (Return Of Asset Class 2 \* Target Weight) plus (.....)*
- **Allocation Effect** = Total Plan Return minus Plan Return At Adjusted Policy Weights. Allocation is the Contribution to Performance resulting from an overweight or underweight to an asset class. E.g. an underweight to an Asset Class that under-performs results in a positive Allocation Effect and vice versa.
- **Selection Effect** = Equal to the Custom Benchmark (Adjusted Policy Index) Return minus Plan Return at Adjusted Policy Weights. This illustrates how the Managers have added or removed value based on their Security Selection decisions, e.g., *If the manager's Actual Returns are higher than the Implied Return there will be a positive Selection Effect.*
- **Policy Index = Custom Benchmark**  
*The "policy index" is a custom benchmark representing the weighted average return of the weighted benchmark indexes for each major investment program. Weights may reflect an adjustment of actual policy for outstanding commitments for new or revised programs, such as for private market programs, which are invested gradually, or for any new or updated program requiring the completion of RFPs and contracts. The policy index/custom benchmark is calculated monthly based on adjusted policy weights at the beginning of each month.*

## Glossary of Terms

Through June 30, 2019



*The indexes and most recent policy weights are as follows:*

*U.S. Equity: Russell 3000 \* 33.10%*

*International Developed (EAFE) Markets: MSCI World ex USA IMI Net \* 12.05%*

*International Active – Global Equity: MSCI ACWI \* 1.65%*

*Emerging Markets: MSCI Emerging Markets \* 6.80%*

*International Emerging Managers FOF: MSCI ACWI Ex US IMI Net \* 0.94%*

*Private Equity: Russell 3000 + 300 b.p. per annum \* 7.02%*

*Private Real Estate – Core: NFI - ODCE Net \* 3.45%*

*Private Real Estate – Non Core: NFI - ODCE Net + 200bps \* 2.50%*

*Infrastructure: CPI + 4% \* 1.92%*

*US Treasury Short Term: FTSE USBIG Treasury 1-3Y \* 0.00%*

*Total Active Government: NYC Treasury Agency + 5 \* 9.41%*

*Core Fixed Income: BBG Barc Agg \* 0.00%*

*Progress Fixed: BBG Barc Agg \* 0.00%*

*Mortgage: FTSE Mortgage Index \* 3.71%*

*ETI: ETI Custom Benchmark \* 0.61%*

*Investment Grade Credit: NYC – Investment Grade Credit \* 4.32%*

*High Yield: Bloomberg Barclays US High Yield 2% Issuer Capped \* 6.00%*

*Bank Loans: Credit Suisse Leveraged Loan \* 2.00%*

*TIPS: BBG BARC Gbl Inf-Lk: US TIPS (Dly) \* 4.52%*

Through June 30, 2019



---

### **Page 20 – Allocation and Selection Effects - Asset Class Breakdown**

- This chart aims to break down the Allocation and Selection Effects shown on the Performance Attribution pages. The aim of the Page is to show the asset classes where Managers are either out performing or under performing their benchmark and to show the basis point effect that this is having on Plan performance.